

Learning Biblical Hebrew Vocabulary: Insights from Second Language Vocabulary Acquisition

by

Jeremy Paul Thompson

Dissertation submitted for the degree of

DOCTOR OF PHILOSOPHY

in BIBLICAL LANGUAGES

at the

University of Stellenbosch



Promotor: Prof. C.H.J. van der Merwe

Co-promotor: Mr. Johan Oosthuizen

Date submitted: December 2013

Hebrew "qh'Ct'u'(' 'Uqekri'Uek'pegu

F gr ctvo gpv'qh'Cpek'pv'Uwf l'gu

Declaration

By submitting this dissertation electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

December 2011

Copyright © 2011 University of Stellenbosch

All rights reserved

Abstract

Though Biblical Hebrew (=BH) is no longer a spoken language, students continue to learn it for the purpose of reading, or at least interacting at a deeper level, with the text of the Hebrew Bible. This suggests that BH shares with any modern language learning course the goal of learning to read. One important part of learning to read is the acquisition of an adequate number of vocabulary items. The purpose of this study is to determine which insights from Second Language Vocabulary Acquisition (=SLVA) research and related fields hold the most promise for a new — and possibly more effective — approach to learning BH vocabulary, to evaluate currently existing BH instructional materials in light of these insights, to develop a new approach based on these insights, and to test aspects of the new approach empirically.

Researchers in SLVA have uncovered a number of helpful insights concerning how vocabulary and vocabulary learning should be defined as well as concerning how vocabulary is best learned. On the other hand, BH instructional materials reflect little to no influence from these insights. These materials have continued to define vocabulary narrowly as individual words and continued to conceive of vocabulary learning primarily as pairing form and meaning in contrast to the much more sophisticated definitions found in the SLVA literature. For example, SLVA researchers consider items beyond the word level, such as idioms, to be vocabulary (Moon 1997; Lewis 1993, 1997). BH instructional materials have also failed to include a significant number of beneficial Vocabulary Learning Strategies (=VLSs), while including some VLSs that are either intrinsically problematic or problematic in the ways they are employed. For example, the strategy of learning semantically related items together is common in BH instructional materials, though it has been shown to be problematic in a considerable number of experimental studies (e.g. Nation 2000; Finkbeiner & Nicol 2003; Papathanasiou 2009).

Since SLVA research has yet to influence BH instructional materials, a new approach to BH vocabulary learning is warranted. This new approach is based on sound theory concerning what vocabulary is and what it means to learn it, while offering learners as many helpful strategies for learning lexical items as possible. To justify this new approach, a set of experimental studies was run including one longitudinal case study and three larger-scale experiments. This testing was partial in nature since it was only possible to test one variable at a time. The testing revealed a number of important areas for future research into BH vocabulary learning.

Opsomming

Alhoewel Bybelse Hebreeus (=BH) nie meer gepraat word nie, hou studente aan om dit aan te leer vir die doel om te lees, of ten minste om op 'n dieper vlak met die oorspronklike teks van die Hebreeuse Bybel om te gaan. Dit impliseer dat die aanleer van BH net soos met die aanleer van moderne tale, ten doel het om die taal te kan lees. Een belangrike aspek van om te leer lees, is om die woordeskat aan te leer wat vir hierdie doel nodig is. Die doel van hierdie studie is om vas te stel watter insigte, verkry uit Tweede Taal Woordeskat-Aanleer (=TTWA) navorsing en ander verwante studieveld, die meeste belofte inhou vir 'n nuwe – en moontlik meer effektiewe – benadering tot die leer van BH woordeskat; om huidige BH leermateriaal te evalueer, in lig van hierdie insigte; om 'n nuwe benadering te ontwikkel gebaseer op hierdie insigte; en om aspekte van die nuwe benadering empiries toets.

Navorsers in TTWA het al heelwat insig verkry in hoe woordeskat en die aanleer van woordeskat gedefinieer behoort te word, sowel as aangaande die mees effektiewe maniere waarop woordeskat aangeleer kan word. Dit lyk egter of beskikbare BH leermanier niks of baie min by hierdie insigte baatgevind het. Hierdie materiaal handhaaf tipies 'n baie nou definisie van wat woordeskat is, te wete, individuele woorde. Dit beskou dus die aanleer van woordeskat as die aanleer van hoofsaaklik woordpare met verskillende vorme en betekenis, in plaas daarvan om die meer gesofistikeerde definisies te gebruik wat in TTWA literatuur gevind word. TTWA navorsers beskou, byvoorbeeld idioome, wat uit meer as een woord kan bestaan, ook as woordeskat-eenhede (Moon 1997; Lewis 1993, 1997). BH leermateriaal gebruik selde van die groot getal beskikbare nuttige Woordeskat Leer-Strategieë (=WLS). Daar word eerder dikwels strategieë gebruik wat volgens TTWA navorsing nie baie effektief is nie.'n Goeie voorbeeld in hierdie verband is die strategie om semanties-verwante items saam te leer. Empiriese navorsing het aangetoon dat hierdie strategie sonder twyfel problematies kan wees (bv. Nation 2000; Finkbeiner & Nicol 2003; Papathanasiou 2009).

Aangesien TTWA feitelik nog geen beduidende invloed op BH leermateriaal gehad het, is 'n nuwe benadering tot die aanleer van BH woordeskat waarin TTWA insigte verreken word, geregverdig. Hierdie nuwe benadering is gebaseer op 'n deeglik begronde teorie model aangaande wat woordeskat is, en wat dit beteken om dit te leer. Verder kan geput word uit die skat van nuttige strategieë wat al in TTWS geïdentifiseer is om sodoende aan BH leerder strategieë te bied wat hulleself al bewys het. Om die nuwe benadering empiries te begrond, is 'n reeks eksperimentele studies geloods. Nie alle aspekte van die nuwe model kon sistematies getoets word nie. Die grondslag vir verdere navorsing is egter gelê.

List of Tables	vii
List of Figures	ix
Abbreviations	x
Acknowledgements	xi
1. Introduction	12
1.1 Problem, Purpose, and Scope	12
1.2 Hypothesis, Research Questions, Assumptions, and Methodology	16
1.3 Relevance	21
1.4 Outline	23
2. Vocabulary Learning Strategies	24
2.1 Explication of Vocabulary Learning Strategies	24
2.2 The Most Productive Strategies For Learning Biblical Hebrew Vocabulary	49
3. Survey and Evaluation of Existing Biblical Hebrew Instructional Materials	66
3.1 Introduction	66
3.2 Conceptions of Vocabulary	66
3.3 Conceptions of Vocabulary Learning	73
3.4 Vocabulary Learning Strategies Presented to Learners	81
3.5 Dobson and Davar	85
3.6 Conclusions	94
4. Developing a New Approach to Biblical Hebrew Vocabulary Learning Using Vocabulary Learning Strategies	95
4.1 Introduction	95
4.2 Determining Which Items to Learn	95
4.3 The Implementation of the Strategies	108
4.4 Summary	135
5. Testing the New Approach	136

5.1 Introduction	136
5.2 Case Study	136
5.3 Larger-Scale Study	150
5.4 A Final Consideration	164
5.5 Conclusion	165
5.6 Addendum	166
6. Conclusion	182
6.1 Hypothesis and Research Results	182
6.2 Avenues for Further Research	184
6.3 Concluding Remarks	188
Bibliography	190

Note on Appendices and Addenda¹

¹ For this study, most of the materials that would traditionally be associated with Appendices or Addenda have been included on a companion website – <http://biblicalhebrewvocabulary.com/>. Part of these materials simply could not be included in the text version of the dissertation because they are in video format (i.e. lectures and listening exercises). The text-based workbook created for this study could have been included as an appendix; however, it is 140 pages long. In addition, the grammar from the University of Stellenbosch used in the case study was too long to include as an appendix. It seemed best to add this note to the Table of Contents and include these materials on the accompanying website. The free Quicktime player and Acrobat Reader are required to view some of the materials.

List of Tables

Table 1.	Degrees of Vocabulary Knowledge	29
Table 2.	Characteristics of Learners	46
Table 3.	Aspects of Word Knowledge/Type of Process Used to Learn	50
Table 4.	Nation's Illustration of the Keyword Technique	56
Table 5.	Illustration of the Keyword Technique Used for BH	58
Table 6.	Individual Words for First-Semester Course in BH	100
Table 7.	Semi-Productive and Irregular Forms for First-Semester Course in BH	103
Table 8.	Multi-Word Items for a First-Semester Course in BH (Preliminary)	104
Table 9.	Multi-Word Items for a First-Semester Course in BH (Final)	106
Table 10.	Case Study Test 1	142
Table 11.	Case Study Test Results	147
Table 12.	Immediate Post-Test Scores for Experiment 1	154
Table 13.	Immediate Post-Test Results for Experiment 1	154
Table 14.	Delayed Post-Test Scores for Experiment 1	155
Table 15.	Delayed Post-Test Results for Experiment 1	155
Table 16.	Immediate Post-Test Scores for Experiment 2	159
Table 17.	Immediate Post-Test Results for Experiment 2	159
Table 18.	Delayed Post-Test Scores for Experiment 2	160
Table 19.	Delayed Post-Test Results for Experiment 2	160
Table 20.	Immediate Post-Test Scores for Experiment 3	162
Table 21.	Immediate Post-Test Results for Experiment 3	162
Table 22.	Delayed Post-Test Scores for Experiment 3	163
Table 23.	Delayed Post-Test Results for Experiment 3	163
Table 24.	Immediate Post-Test Scores for Experiment 1 (Addendum)	169
Table 25.	Immediate Post-Test Results for Experiment 1 (Addendum)	170
Table 26.	Delayed Post-Test Scores for Experiment 1 (Addendum)	170
Table 27.	Delayed Post-Test Results for Experiment 1 (Addendum)	170
Table 28.	Immediate Post-Test Scores for Experiment 2 (Addendum)	173
Table 29.	Immediate Post-Test Results for Experiment 2 (Addendum)	173
Table 30.	Immediate Post-Test Scores Minus Potential Outlier	174

Table 31.	Immediate Post-Test Results Minus Potential Outlier	174
Table 32.	Delayed Post-Test Scores for Experiment 2 (Addendum)	174
Table 33.	Delayed Post-Test Results for Experiment 2 (Addendum)	175
Table 34.	Immediate Post-Test Scores for Experiment 3 (Addendum)	179
Table 35.	Immediate Post-Test Results for Experiment 3 (Addendum)	179
Table 36.	Delayed Post-Test Scores for Experiment 3 (Addendum)	180
Table 37.	Delayed Post-Test Results for Experiment 3 (Addendum)	180

List of Figures

Figure 1.	Screenshot - Meaning page for מַטְרָא	111
Figure 2.	Screenshot - Listening Exercise (Example 1)	114
Figure 3.	Screenshot - Listening Exercise (Example 2)	114
Figure 4.	Screenshot - Weekly Breakdown	116
Figure 5.	Screenshot - Daily Breakdown	116
Figure 6.	Screenshot - Daily Exercises	117
Figure 7.	Screenshot - Physical Action (Example 1)	118
Figure 8.	Screenshot - Physical Action (Example 2)	118
Figure 9.	Screenshot - Color-coded “Flashcard” Page	119
Figure 10.	Screenshot - Link with Similar Sounding English Word (Example 1)	122
Figure 11.	Screenshot - Link with Similar Sounding English Word (Example 2)	122
Figure 12.	Screenshot - Keyword Technique	123
Figure 13.	Screenshot - Categorization and Matching Exercises (1)	124
Figure 14.	Screenshot - Categorization and Matching Exercises (2)	124
Figure 15.	Screenshot - Categorization and Matching Exercises (3)	125
Figure 16.	Screenshot - Categorization and Matching Exercises (4)	125
Figure 17.	Screenshot - Categorization and Matching Exercises (5)	126
Figure 18.	Screenshot - Categorization and Matching Exercises (6)	126
Figure 19.	Screenshot - Relate New Word to Oneself	127
Figure 20.	Screenshot - Repeat New Word Aloud	128
Figure 21.	Screenshot - Review Frequently (Example 1)	129
Figure 22.	Screenshot - Review Frequently (Example 2)	129
Figure 23.	Screenshot - Use a Picture (Example 1)	132
Figure 24.	Screenshot - Use a Picture (Example 2)	132
Figure 25.	Screenshot - Pantomime and Gesture (Example 1)	134
Figure 26.	Screenshot - Pantomime and Gesture (Example 2)	134

Abbreviations

BH	Biblical Hebrew
L1	First Language
L2	Second Language
LLS	Language Learning Strategy
SLVA	Second Language Vocabulary Acquisition
VLS	Vocabulary Learning Strategy

Acknowledgements

This study is a blend of interests from both my undergraduate-level study of psychology and graduate-level study of Biblical Hebrew. These ideas developed more fully in an introductory course in Biblical Hebrew at the New Orleans Baptist Theological Seminary. Though we had a good instructor, a number of my classmates struggled to learn the language. I believed this was the combined result of students not knowing how to go about language learning and a poorly conceived introductory grammar. In light of this experience, I determined to take one small aspect in the language learning process, namely vocabulary learning, and undertake a study that could benefit struggling students like these.

At first, I was unsuccessful in finding a doctoral program where my idea for a dissertation would fit because many institutions were focused primarily on exegesis and theology. By nothing other than divine providence, I came across the program in Biblical Languages at the University of Stellenbosch. I contacted Christo van der Merwe with my idea for a dissertation and received a message back that might have been twice as long as the one I had sent. Through our correspondence, I learned that he had long held an interest in applied linguistics and Biblical Hebrew, though his primary research focus lay elsewhere. He agreed that I had a good idea for a dissertation, and I began to craft a proposal. Through that process, Van der Merwe came to believe that we would need outside expertise for the applied linguistics aspect of the research. He then arranged for Johan Oosthuizen to be a co-promoter for the study.

Each in their own way, Van der Merwe and Oosthuizen have had an impact on this study for the better. Van der Merwe provided immeasurable support and encouragement throughout. His stress on getting the “logic” of the study right from outset led to his influence manifesting on every page. Oosthuizen’s keen eye for detail has resulted in greater precision of thought.

Along with Van der Merwe and Oosthuizen, I must also acknowledge a number of others. I am thankful for the friendship and support of Karyn Traphagen, who shares similar interests and started at Stellenbosch shortly after I did. I am grateful to those who helped me in the testing phases of this study, including Van der Merwe and Traphagen as well as Matt Jones, Fr. Pat Madden, Walter Brown, Steven Laufer, and Tarsee Li, among others. I am thankful for my former Hebrew instructors Charles Isbell, Archie England, Dennis Cole, Rick Byargeon, and Harold Mosley, without whom I would not have had a foundation for this study. I am also thankful for Gary Wyss, my high school Latin instructor, who awakened in me and many of my classmates the love of a dead language at an early age. I am thankful for my mother and father, who have always loved me unconditionally and for whom my education has always been of the utmost importance. I am thankful for Erica, Abigail, and Katherine — words are inadequate. They bore the brunt of this study more than anyone else. Maybe now, Daddy will not “always have to work” for a while. Finally, I am thankful to God, who, though this study will one day (whether sooner or later) be lost in the passage of time, has spoken a word that endures forever.

1. Introduction

1.1 Problem, Purpose, and Scope

1.1.1 Problem

Though Biblical Hebrew (=BH) is no longer a spoken language, students continue to learn it for the purpose of reading, or at least interacting at a deeper level with the text of the Hebrew Bible.¹ This suggests that BH shares with any modern language course the goal of learning to read. One important part of learning to read is the acquisition of an adequate number of vocabulary items. In recent years, researchers in Second Language Vocabulary Acquisition (=SLVA) have uncovered a number of insights leading to modern, theoretically sound approaches to vocabulary learning that provide learners with a number of helpful tools.

Here are only two examples of theoretical soundness from SLVA and related research. First, SLVA researchers, as well as researchers in related fields like theoretical linguistics, have made significant advances in how vocabulary is defined (Schmitt 2001:1–2). In the past, vocabulary has generally been defined as individual words, hence the term *vocabulary words*. Yet it has not always been clear which individual words should be considered vocabulary. An example of this can be found in the distinction between regularly inflected forms and semi-productive forms. Instructional materials for a variety of languages have traditionally included only a root for regularly inflected forms, though sometimes other forms based on the root are included within the definitions of these words. For example, *run* is usually considered a vocabulary item, whereas *runs* is not. This is an easy example; however, the matter quickly becomes much more complex with words like *drink* and *drank*. These are referred to in the theoretical linguistics literature as semi-productive forms. According to recent research, it would appear that *drink* and *drank* are stored separately in the mental lexicon, whereas a regularly inflected form like *runs* is not (Jackendoff 2003:156–59). So, items like *drink* and *drank* should be treated as vocabulary items, though they certainly need to be linked in some way. BH instructional materials have not normally categorized these kinds of items as vocabulary. I could give further examples here, but the central idea is that researchers in SLVA and in related fields have come to much clearer ideas, though by no means universally agreed upon, about what kinds of items should be considered vocabulary.

Second, SLVA researchers have also come to a better understanding of what it means to learn a vocabulary item. Customarily, vocabulary learning has been understood as pairing form and meaning. Thus, learning the BH word בן has consisted of little more than learning that it means “son.” Yet this understanding of matters quickly becomes complicated when considering whether a student must know the converse. In other words, should a student be able to see the word “son” and respond with בן ? In SLVA research, this is generally referred to as the distinction between passive recall and active

¹ I will discuss reading in section 1.2.2 below, and in much more detail in 4.2.1.

recall (Laufer & Goldstein 2004).² SLVA researchers and language instructors are divided over whether passive recall or active recall should be preferred, and there are strong arguments to be made on both sides.

Beyond the theoretical level, SLVA researchers have also studied how language in general and vocabulary in particular are best acquired. Their research has considered both the processes involved in vocabulary learning (e.g., explicit learning and implicit learning) and specific strategies that fall within these different kinds of processes (DeKeyser 2003). Some strategies that have traditionally been very common in instructional materials have been shown to work poorly, whereas other strategies that are simple enough to be overlooked actually work quite well.

At this point, the question might well be asked if any of these insights from SLVA have had an influence on the teaching and learning of BH. Before beginning this dissertation, I performed a preliminary study to answer this question, and the answer appears to be that BH instructional materials reflect little to no influence from this research. Even since my beginning this study, some research has been done on the instruction of BH as a whole (e.g., the COHELET project), but to my knowledge there have been no studies specifically focusing on vocabulary learning.³ Thus, many of the insights from SLVA and related research continue to be overlooked.

I will give one example. There are three primary, vocabulary specific texts currently available for BH (Mitchel 1984; Landes 2001; Van Pelt & Pratico 2003). Though researchers in SLVA have offered a considerable number of strategies for learning vocabulary (Schmitt 1997), these three texts, with the possible exception of Landes (2001:1–6), contain little more than considerably long lists of words. They give little to no instruction to learners as to how they should go about learning the words in these lists. Furthermore, one strategy that two of the texts use to a significant degree is learning semantically related words together (Landes 2001; Van Pelt & Pratico 2003:90–137). This is a strategy that has been shown in a considerable number of studies to be potentially detrimental for learners due to the problem of interference (Higa 1963; Underwood, Ekstrand & Keppel 1965; Kintsch & Kintsch 1969; Balhouq 1976; Stock 1976; Tinkham 1993; Laufer 1997b; Tinkham 1997; Waring 1997; Nation 2000; Finkbeiner & Nicol 2003; Papathanasiou 2009). Interference occurs when vocabulary items are not distinct enough from one another, causing learners to confuse them (Nation 2001:303). I admit that this finding is unexpected (which may be why the results have been replicated so often); however, it is telling that two of the three major vocabulary specific texts for BH make use of a strategy that has been shown so many times to be potentially detrimental.

² Laufer's research is highly significant throughout this study as much of her research deals with Semitic languages.

³ COHELET stands for "Communicative Hebrew Learning and Teaching." More information about this project can be found at the following site: <http://seminary.ashland.edu/cohelet/index.html>. COHELET does treat vocabulary to some extent; however, this does not seem to be the overarching focus.

1.1.2 Purpose

Considering these advancements in the area of SLVA research and the lack of influence that this research has exerted on BH instructional materials, I deemed it necessary to perform a study to:

- determine which insights from SLVA research and related fields would hold the most promise for a new, and possibly more effective, approach to learning BH vocabulary;
- evaluate currently existing BH instructional materials in light of these insights;
- develop a new approach based on these insights; and
- test the new approach empirically.

I will consider each of these focal points separately.

First, it seems clear that some findings from the field of SLVA will be more important for BH instruction than others. In fact, some will not be very useful for BH instruction at all. As a simple example, BH instruction and modern language instruction share reading as a goal for learners; however, modern language instruction also has other goals not traditionally associated with the learning of BH, such as acquiring the ability to engage in conversation. Of course, it might be possible to converse in BH (or at least something approximating BH since it can only be reconstructed from the text of the Hebrew Bible, and it is not entirely certain what the language sounded like), but until very recently most instructors have not really seen this as a valuable goal. In fact, even when conversing in BH is a goal of instruction, it is only because it is believed that this will make students better readers (Overland 2008:2; I will discuss communicative goals for learning BH in more detail in section 1.2.2 below). The fact that much of the SLVA research has been done on modern languages with different instructional goals will in itself make some of the findings from the field less valuable for the learning of BH.

Furthermore, some research in SLVA has been done on subjects learning languages similar to their native languages, such as English speaking students learning Spanish. Thus, some strategies appear helpful in the SLVA research but will not be very helpful in the case of this study. An example of such a strategy is linking cognates that are spelled similarly in both languages (Stoffer 1995), e.g., like *absolute* – *absoluto* in English and Spanish. I will be writing from the perspective of students learning a Semitic language but whose native language is non-Semitic. Consequently, linking similarly spelled words would have limited usefulness, though it appears to be important in some of the SLVA research. Against this background, the first purpose of this study was to determine which parts of the SLVA research are valuable for developing new, potentially better approaches, for learning BH vocabulary.

Second, it was necessary to evaluate existing BH instructional materials in light of the SLVA research.⁴ Indeed, were it possible to find a current approach to BH vocabulary learning that was successfully making use of the helpful insights from SLVA, this study would be unnecessary. Several

⁴ The development and testing phases of this project began in 2007; thus, the evaluation focuses primarily on materials available up until that point.

types of BH instructional materials were examined since vocabulary texts like those mentioned in section 1.1.1 above are not the only kinds of materials that include vocabulary. Likely the first place the majority of BH learners will encounter vocabulary is in an introductory grammar. Accordingly, the evaluation included a broad spectrum of BH instructional materials, including vocabulary specific texts, introductory grammars, and to some extent graded readers.

The third point of the study was to design a new instructional method employing the best insights from SLVA. After evaluating a broad spectrum of current BH instructional materials, I developed a holistic approach, the effects of which could be seen, at least to some degree, both short-term and long-term. In other words, the approach needed to be tested both in short, one-time learning sessions and over a full semester course.

The final purpose of this study was to test the new approach empirically. The necessity of empirical testing in a study of this kind would seem to go without question; however, as it pertains to current BH instructional materials, this idea will be relatively novel. A considerable number of BH materials claim to work well or even better than competing texts. Yet they offer little to no empirical support for these claims (Van der Merwe 2002⁵; Greenspahn 2005). In fact, some of these texts include instructional practices that have clearly been demonstrated by research in SLVA not to work very well (e.g., learning semantically related words together; see once again Higa 1963; Underwood, Ekstrand & Keppel 1965; Kintsch & Kintsch 1969; Balhouq 1976; Stock 1976; Tinkham 1993; Laufer 1997b; Tinkham 1997; Waring 1997; Nation 2000; Finkbeiner & Nicol 2003; Papathanasiou 2009). This leads one to believe not only that these claims have gone untested, but also that they are actually false.

1.1.3 Scope

As hinted in section 1.1.1, there have been several recent studies focused on trying to improve BH instruction and instructional materials (e.g., the COHELET project; see footnote 3 above). However, even in these cases, the emphasis has been on instruction as a whole and not specifically on vocabulary. In the case of this study, I have done my best to limit the scope strictly to vocabulary, though as will be seen in Chapter 2, the traditional distinction between vocabulary and grammar has been called into question to a significant degree (Lewis 1993). With this said, I will outline below two important ways in which this study has been limited.

First, in this study, I do not yet answer a number of important questions about how BH vocabulary learning should fit into an overall course. There are several reasons for this, perhaps the most important being that answering this question would require going much farther afield into discussions of grammar, though I do deal with grammar to some degree. In fact, it appears that determining how BH vocabulary should fit into an overall course structure could be the subject of an extensive study in

⁵ Throughout this study I will be making reference to this work. I received an electronic copy from the author without page numbers corresponding to those in the monograph in which the paper is included; therefore, I cite it without page numbers. The full information is, however, included in the citation in the bibliography.

its own right. Against this background, I simply chose the instructional materials used for a first-semester course in BH at the University of Stellenbosch and proceeded to incorporate the new approach to vocabulary learning into these.

In addition, I have limited the discussion of goals for BH instruction, though I do discuss communication to some degree in the assumptions made below (see section 1.2.2 of this chapter) and in the chapters that follow. A simple change in goals for BH instruction would considerably alter matters like the number of vocabulary items that should be learned in a course. For example, if one were to decide that in light of the availability of hypertext versions of the Hebrew Bible students need less vocabulary than sometimes assumed to be able to understand BH texts at a deeper level (as I do in this study to a certain degree, in light of Van der Merwe 2002, 2005b), this would drastically reduce the number of vocabulary items required in a first-semester course in BH. The converse is also true, namely, if one believes that use of hypertext technology should be limited, this could drastically increase the number of items needed. Yet dealing with overall goals for learning would have been an entirely different field of research, and, in fact, research on overall goals for learning BH is already in progress.⁶ Thus, the set of goals used in Van der Merwe (2002), a study which forms a part of the basis for the instructional materials currently used at the University of Stellenbosch, were simply adopted for this study with some modifications. I do not assume that these goals will prove to be entirely without alteration in the future; however, in order to limit this study to vocabulary, some goals had to be adopted (see Chapter 4, section 2.1).

A second major point, especially regarding the testing done in Chapter 5, is that the testing in this study is limited to what would be simplest to incorporate and most widely applicable. I would be remiss if I did not mention here that the process of developing the testing for this study was not without its problems. This is what happens sometimes when one engages in interdisciplinary research. A person who has made a prolonged study of BH has little to no training in running experiments. Thus, an initial set of testing was performed for this study that attempted to test too many variables at one time. As a result, the idea of limiting the testing to what would be simplest to incorporate and most widely applicable was adopted at a later stage.

1.2 Hypothesis, Research Questions, Assumptions, and Methodology

1.2.1 Hypothesis and Research Questions

There will be some degree of overlap between this section and what has preceded it; however, at this point, a statement of hypothesis and research questions will offer more specificity. There is one primary working hypothesis. It reads as follows:

A new – and potentially better – approach to learning BH vocabulary can be developed by making use of insights from research on SLVA.

⁶ Karyn Traphagen has begun a doctoral research project through the University of Stellenbosch on goals for BH instruction.

This hypothesis carries with it the following important research questions:

1. Which insights from SLVA research hold the most promise for developing an effective approach to learning BH vocabulary, especially in light of BH's nature as a text-based language?
 - a. How do SLVA researchers define vocabulary?
 - b. What do SLVA researchers say about what it means to learn vocabulary?
 - c. What are Vocabulary Learning Strategies? And, which Vocabulary Learning Strategies would be most helpful for learning BH vocabulary?
2. What are the current approaches to learning BH vocabulary?
 - a. What are each current approach's strengths in light of the recent SLVA research?
 - b. What are each current approach's weaknesses in light of the recent SLVA research?
 - c. Can any of these current approaches serve as a foundation for a new approach based upon insights from research on SLVA?
3. If the answer to question 2c is no, what then does an approach to BH vocabulary learning based on insights from SLVA research look like?
 - a. What does it include as vocabulary?
 - b. What does it take as its understanding of what it means to learn vocabulary?
 - c. Which Vocabulary Learning Strategies does it employ and how?
4. If the approach from question 3 is developed, does it produce better empirical results than currently existing approaches?

This set of research questions is not intended to be exhaustive; however, it will guide the overarching structure of the dissertation.

1.2.2 Assumptions

Assumption 1: BH is enough like modern languages to make research on these languages useful.

As stated above, BH is a text-based language. Its pronunciation is uncertain to some degree. Further, it has a far more limited vocabulary than a modern language with an ever-growing vocabulary. This makes the study of BH different to a certain extent than the study of modern languages. Yet despite these and other differences, it is, in fact, a language. As such, research on how modern languages are learned can have benefits for the learning of BH (Van der Merwe 2002). Nevertheless, research on how modern languages are learned must consistently be held up against the unique characteristics of BH to determine which insights will cross over.

Assumption 2: Communication should not be an overarching goal of BH instruction.

This assumption is related to the first, and I list it here because it will come into view a number of times throughout the study. Namely, this assumption will result in the elimination of a certain number

of Vocabulary Learning Strategies in Chapter 2 of this study. Furthermore, the growth in the use of communication in BH classrooms requires some explicit discussion. I realize that there are groups of BH instructors who have taught the language using communicative approaches and who are interested in developing communicative approaches (see footnote 3 on the COHELET project above).⁷ I have very little doubt that these approaches will produce better results than a traditional grammar-translation method. At the very least, communicative methods might be more interesting than a grammar-translation method, and interest is certainly an important part of language learning.

Yet I will begin by noting that I believe a significant number of others share the assumption that communication should not be a goal of BH instruction, though some of them do not say so explicitly. Walker-Jones (2003:1-8) has a lengthy introductory section in his grammar dealing with research in applied linguistics. After surveying the relevant research Walker-Jones states (2003:4-5; emphasis added):

Although I have tried to state as clearly as possible the problems with Grammar Translation, I am not advocating the wholesale rejection of the method. Communicative Language Approaches in contemporary applied linguistics are primarily for developing fluency in modern languages. Grammar Translation works against fluency, but has its advantages in biblical studies where scholarly literature often discusses vocabulary and grammar. Grammar Translation is a quick way for some learners to understand and engage in those discussions ...

Studies in applied linguistics show that people learn a language, even the grammar, better in the context of meaningful communication. One way to apply this in biblical studies would be to have students learn Modern Hebrew either before or during the learning of Biblical Hebrew. *For biblical studies, a more direct approach is to integrate the learning of grammar into the meaningful, communicative context of communication ...*

Walker-Jones recognizes communication as a *possible* way to teach BH; however, he is not convinced that this is the *best* way. Perhaps I am speculating here, but I think that this is the way a significant number of instructors of BH feel. Many instructors of BH have likely studied modern languages in communicative contexts in the past, but most of them have not incorporated communicative instruction into teaching BH. Perhaps most of them have overlooked the possibilities of communicative instruction and not made a connection, but I believe it is likely that many do not see

⁷ Another example would be Randall Buth who has used communicative approaches for teaching BH for perhaps the longest amount of time. Information about Buth's programs can be found here: <http://www.biblicalulpan.org/>. From a set of demos—<http://www.biblicallanguagecenter.com/sample-hebrew-lesson/> and <http://www.biblicallanguagecenter.com/hebrew-firs-lesson/>, it appears that the beginning materials suffer from several of the problems noted throughout this study. All instruction at the beginning level appears to be in the second language (L2), though Laufer and Goldstein (2004) have identified passive recall as the best predictor of overall language learning success and Kang (1995) has determined that a picture plus first language (L1) translation of an item is better for recall than a picture alone. Semantically related words are introduced together (e.g. “bread,” “fish” and “egg” are introduced together in the demo) with the potential problem of interference (see section 1.1.2 above). In addition, it does not seem that important questions have been answered concerning just how much communicative competence may be necessary. The materials appear to include 500 vocabulary items but may significantly underestimate the number of items that must be used communicatively before this aids in learning to read (Goulden, Nation, & Read 1990; Knutson 1993).

incorporating communication into instruction as fitting with the goals of their students or institutions. This may implicitly show that a large number of instructors do not believe communication should be a goal.

Against this background, I should offer some defense of this assumption that I believe I share with a number of others, though if this assumption were to be shown to be invalid, I would revise my work in light of communicative approaches. Actually, I do not think such findings would invalidate most of the research done for this study. It is important to point out that communicative methodology does not require that *all* instruction be done in the language being studied (i.e., L2). Many instructors of second languages make use of the native language of learners in their instruction. For example, consider that Laufer and Goldstein (2004) propose that passive recall, a type of recall that involves the first language (i.e., L1) of the learner, is the best predictor of overall language learning success. In addition, Lewis suggests that trying to eliminate the L1 entirely in L2 instruction is relatively absurd (I believe his tone merits the use of this word) in a section entitled “Translation is Inevitable” (2002:60–61). He notes that translation is a natural way for learners to approach a second language, though he certainly does not suggest a return to a grammar-translation approach. As a BH example, it seems intuitive that while an instructor might show a learner a picture of a “man” while saying the BH word אָדָם , the learner is likely thinking internally, “ אָדָם means ‘man’.” In Lewis’ opinion, it is best to work with this tendency rather than against it. Thus, materials like the flashcard program developed for this study could still be incorporated into communicative instruction. Insights concerning how many items should be studied at one time would still be valid, only the exercises developed in this study could be supplemented with communicative strategies. For example, within the flashcard program, students could be offered the strategy of using the BH words in a sentence.

I will give three reasons why I assume that communication should not be a goal for BH instruction. The first reason very simply stated is that, though communicative techniques may be used in a BH classroom, students are not *really* communicating in BH, but rather in a reconstruction of the language. As stated already, BH is a text-based language that is no longer in use (Van der Merwe 2002). Thus, any communicative materials for learning BH could only be reconstructed from the text of the Hebrew Bible. Yet it is somewhat of a truism in linguistics research that written language is not simply spoken language written down. Halliday states, “Written language is not spoken language written down. Writing and speaking are not just alternative ways of doing the same thing; rather they are ways of doing different things” (1989:xv). Of course, the text may give helpful indications concerning how BH may have been spoken; however, at a theoretical level, it will be as if students are still learning strictly from the text since it is the only means for reconstructing the spoken language. Furthermore, some parts of the communicative instruction would be artificial. For example, if instructors ask students to “turn to page X” in the language of instruction (i.e., BH), this would be somewhat artificial because BH writing was not done in books. In other words, there is no word for “page” in BH. Therefore, it remains to be seen what potential confusion may arise from using a reconstructed language.

Second, there are examples of successful programs that do not include communication as a goal of instruction. This brings up a point that I hinted at from the very start, namely that reading may not be the best way of explicitly stating the goals for BH instruction. In truth, students may say that they want to “read” BH; however, what most students likely have in mind is not reading, but rather what reading researchers would call bottom-up processing (Nuttall 1996:16–17). In other words, students want to be able to use BH to interact with the text of the Hebrew Bible at a deeper level and be able to interact with translations and critical commentaries. The advent of hypertext versions of the Hebrew Bible has made this goal much more realistic and has done so without including communication as a goal. Van der Merwe (2005b) states that after his incorporating the use of hypertext into BH instruction, a follow-up survey revealed that 78% of the Dutch Reformed pastors who had gone through this type of instruction “now say they read the Greek and Hebrew Bible regularly.” This was as opposed to a 31% rate before the incorporation of hypertext technology. With this success rate in mind, it seems plausible that a method for BH instruction that incorporates the use of hypertext could allow students to reach their goals without the extra burden of learning to speak the language.

Finally, and perhaps most importantly, it is not clear how much communicative competence is needed to begin to use this knowledge in learning to read. Indeed, the pattern of first language (i.e., L1) learning does suggest that children learning to read follows upon some degree of their oral proficiency. The problem is that many children begin to read very simple material around the age of five- or six-years-old, when they have a vocabulary of somewhere around 4,000 or 5,000 word families — not individual words (Goulden, Nation, & Read 1990). Now, consider that these children are reading only very simple material. Their vocabulary must grow to a much larger size before they can handle literature. And literature is essentially what students are encountering whenever they take up the Hebrew Bible to read, with a significant amount of it being poetry. It is unclear, then, exactly what level of proficiency in speaking BH would actually be helpful in learning to read or interact with the Hebrew Bible at a deeper level.

Furthermore, it is important to keep in mind where in the learning process modern language instruction usually introduces literature. In modern language instruction, literature is generally not introduced in any significant way until the second or third *year* of instruction (Knutson 1993:12). Two or three years of instruction is often not even an option when it comes to BH.⁸ In some institutions, students may only receive one or two *semesters* of instruction. For example, DeClaissé-Walford (2002) had to design her grammar with a short instruction time in mind. Thus, it is uncertain whether it is even possible under many circumstances to develop a student’s communicative capabilities in the language to the point where these abilities will help them to understand literature.

In sum, therefore, I will proceed in this study under the assumption that communication should not be a goal in BH instruction since this goal could potentially be problematic at the theoretical level. Even more important, it may be possible to construct a successful approach without this goal, and it is

⁸ As one example, in my masters-level institution, only one semester of BH was required for students in a number of different degree programs.

uncertain whether students could attain a level of communicative competence that could actually help them in the time that they have to learn the language. I am content, then, to leave the research done in this dissertation open to revision, pending further research on overarching goals for BH instruction.

1.2.3 Methodology

The methodology for this study will follow four major steps:

- Research
- Evaluation
- Development
- Testing

In step one, I will survey the SLVA research as well as the research in related fields for any findings that seem valuable for the learning of BH vocabulary. The foundation for this survey is two primary texts, namely *Second Language Vocabulary Acquisition* (Coady & Huckin 1997) and *Vocabulary: Description, Acquisition and Pedagogy* (Schmitt & McCarthy 1997). The reason for beginning with these two texts is that they are in themselves surveys of the field of SLVA research. These texts introduce the reader to some of the best-known and widely published researchers in the field, who work from a variety of different perspectives. As such, the texts also introduce one to a number of the important debates within the field.

In step two, I will evaluate current BH instructional materials in light of the survey performed in step one. This evaluation will be multi-faceted, beginning with the theoretical standpoint of how these texts conceive of vocabulary and moving to the more practical level of how vocabulary is incorporated into the materials. In step three, a new approach to BH vocabulary learning will be developed in light of the research in step one. This approach will be tested empirically in step four.

1.3 Relevance

1.3.1 Implications for BH Instructors and Textbook Authors

Those who will be most interested in the results of this dissertation are instructors of BH and textbook authors. Though this dissertation is aimed toward developing an altogether new approach for BH vocabulary learning, there will be aspects of the study that could fairly easily be adopted by interested instructors without changing their entire approach to teaching the language. As stated above, the primary strategy chosen for testing in Chapter 5 was selected because of its simplicity and ease of incorporation. Thus, instructors could come away from this study with practical material to be used in their classrooms.

Authors of BH textbooks and vocabulary materials will want to look at the research in much more detail. Indeed, there may be some limit to what BH instructors can use from this study because ultimately they must choose a textbook. If that textbook does not correspond very well to the layout

of this study, they will only be able to make use of it to a limited degree. So, if the research contained in this study is going to be adopted in any comprehensive way, it would need to be done by this second set of interested readers.

What, then, would be the potential relevance for textbook authors? First, this study should provide a better theoretical foundation concerning what vocabulary actually is and what it means to learn it. Indeed, if a text does not have the issue of vocabulary correct at the theoretical level, there will ultimately be a breakdown in a student's overall language learning process. For example, a more theoretically sound approach would include multi-word items like idioms as vocabulary, though most BH instructional materials do not. Idioms are known for their "non-compositionality" (Moon 1997:44). In other words, the meaning of idioms cannot be constructed by knowing all the individual parts. Thus, a student who has learned the individual meaning of every BH word in existence could still encounter an idiom and not know how to understand it.

In addition to a more theoretically sound approach to BH vocabulary learning, textbook authors could also come away with some very simple suggestions concerning how these vocabulary items might best be learned. The current default method appears to be providing students with either lists of words or flashcards, without providing any other instructions for how best to learn the words. At the very least, textbook authors would learn how to avoid some potentially detrimental strategies, like teaching semantically related words together (see section 1.1.1 above for a list of relevant studies). This goes for texts that group together items with similar meanings, such as Landes (2001), but also for texts that group together items with similar grammatical features, e.g., learning a number of a particular kind of verbs together, as in Pratico and Van Pelt (2001).

Finally with regard to textbook authors, they could come away with an appreciation for experimentation. As stated in section 1.1.2, BH instructional materials are often produced with claims that they work well or better than competitor volumes; however, there is usually little or no empirical research to validate these claims (Van der Merwe 2002; Greenspahn 2005). In contrast, this study lays out an example of a set of materials being developed on the basis of research and then being tested. Textbook authors should test their claims empirically and then include the results of testing to support that their text produces better performance, at least concerning certain aspects of BH language learning.

1.3.2 Implications for Instruction in Other Ancient Languages

A second group of researchers who might be interested in this study is instructors of other ancient languages. Since instructors of BH are often instructors of the Hebrew Bible, they often work in close contact with New Testament instructors, who work more closely with Koine Greek. BH and Koine Greek are two very different languages; however, many of the insights concerning the definition of vocabulary and what it means to learn vocabulary would also be applicable to Koine. In addition, a number of the strategies determined to be useful for learning BH vocabulary would also be beneficial for learning the vocabulary of other ancient languages. Yet some strategies not very useful for

learning BH vocabulary might be more useful for Koine Greek vocabulary, like making links between similarly spelled words (Stoffer 1995). Since many English words have Greek roots, this strategy would be more helpful for Greek than for BH, considering that English does not borrow many words from Hebrew or share common origins. Thus, a separate study might still be useful for other ancient languages, like Koine Greek, though this study could provide a good framework with which to begin.

1.3.3 Implications for SLVA

A final group of researchers who might be interested in this study would be researchers in SLVA. The testing done in Chapter 5 of this study is similar to testing done by Carter, Hardy, and Hardy (2001); however, it is by no means identical. For instance, the study by Carter, Hardy, and Hardy tested more advanced learners and included some words that the subjects already knew, whereas this study is focused on beginning learners and in this way may add some helpful information to the field of SLVA research. In addition, the survey in Chapter 2 of this study may serve as a helpful literature review for someone who is taking an interest in the field of SLVA.

1.4 Outline

Chapter 2 is in many ways the chapter that is most central to this study as a whole. As stated previously, the evaluation in Chapter 3 and development in Chapter 4 are both based on the research done in Chapter 2. It is a foundational chapter in that it introduces and defines many of the terms that will be used throughout the study. In Chapter 2, I offer a definition of what vocabulary is and what it means to learn it. I also survey Vocabulary Learning Strategies and evaluate their potential benefit for the learning of BH vocabulary.

In Chapter 3, I evaluate currently existing BH instructional materials. These instructional materials fall into several primary categories. I evaluate vocabulary specific materials as well as introductory grammars. BH graded readers are analyzed to a limited degree. These materials are evaluated to determine how they understand vocabulary and vocabulary learning as well as what kinds of strategies they suggest to students.

In Chapter 4, I develop a new approach to BH vocabulary learning, or at least explain that development. Much of the material that was developed for this study is included on the website that accompanies the dissertation (<http://biblicalhebrewvocabulary.com/>). This new approach specifically seeks to maintain a theoretically sound understanding of what vocabulary is and what it means to learn it, as well as to offer learners helpful suggestions for the best strategies to use in learning the items. This new approach is then tested to a certain degree in Chapter 5.

Chapter 6 is the conclusion of the study. Since the study is supplemented with summaries throughout in an attempt to keep the main ideas tied together, only a brief summary is given in the final chapter. The primary focus is on suggesting avenues for future research. These suggestions are made especially in light of the the testing done in Chapter 5.

2. Vocabulary Learning Strategies

2.1 Explication of Vocabulary Learning Strategies

2.1.1 Defining Vocabulary Learning Strategies

Before beginning to discuss particular strategies and their usefulness for learning BH vocabulary, I will first define the term Vocabulary Learning Strategies (=VLSs). Unfortunately, since research on VLSs is in a seminal state, there is no consensus in the applied linguistics literature about an adequate definition. Nation states that: “It is not easy to arrive at a definition of what a strategy is ...” (2001:217). Neither Schmitt (1997), nor Nation (2001), proposes an explicit definition of VLSs, though they discuss possibilities in much detail. Against this background, I will analyze the component parts of VLSs in order to provide a definition that can be used for the purposes of this study. It should, however, be noted that the definition proposed in this study will differ from the definitions proposed by scholars in the field of applied linguistics primarily due to the lack of consensus among these scholars. The analysis that follows will seek to define the term VLSs by answering three primary questions:

- What is vocabulary?
- What does it mean to learn vocabulary?
- What are language learning strategies?

2.1.1.1 What is Vocabulary?

As hinted at in Chapter 1, defining the term *vocabulary* may not seem like a complex issue; however, further investigation reveals it to be quite a difficult endeavor. Those with a simplistic view would simply define vocabulary as *words*. However, Schmitt points out the inadequacy of such a definition: “The first idea that probably springs to mind is *words*, a formulation that is admirably adequate for the lay person. But for anyone interested in exploring the subtlety and magic of lexis, the term *word* is too general to encapsulate the various forms vocabulary takes” (2001:1). Many other linguists have cited a variety of problems with defining vocabulary as words; therefore, it is necessary to examine the literature of the interrelated fields of theoretical linguistics, applied linguistics, theoretical lexicography, and psycholinguistics in order to arrive at an adequate definition of the term vocabulary. A first problem in defining vocabulary as words is the existence of multi-word items. Schmitt (2001:1) illustrates this problem by using the following example of single-word and multi-word units that have the similar meaning of *to die*, though they differ pragmatically:

die
expire
pass away
bite the dust
kick the bucket
give up the ghost

In these examples, Schmitt notes that there is not a “one-to-one correspondence between a single meaning and a single word” (2001:1). Thus, Schmitt claims that these multi-word units should be considered as vocabulary items.

Several linguists have sought to identify the various types of multi-word items that exist. Lewis (1997:255–56) identifies four types of multi-word items: polywords, collocations, institutionalized utterances, and sentence frames/heads. Lewis gives the following descriptions of each of these types of multi-word items. Polywords are “phrases that have a degree of idiomaticity (*by the way, on the other hand*), and have usually appeared in even quite simple dictionaries” (256). Collocations are words that occur together with a high level of frequency, like *to raise capital* (256). Institutionalized utterances are common utterances that “are recalled as wholes and of which much conversation is made” and that “tend to express pragmatic rather than referential meaning” (257). An example of an institutionalized utterance would be *There’s a call for you* (257). In contrast to institutionalized utterances, sentence frames/heads are more common in written language and consist of combinations like *and finally* and *We come now to a number of important reservations* (259).

Moon (1997:44–47) suggests five types of multi-word items based on English-language corpora: compounds (*wild flower*), phrasal verbs (*give up*), idioms (*have an axe to grind*), fixed phrases (*by far, of course*), and prefabs (*the thing/fact/point is*). Moon’s classification system is not much different from Lewis’; however, what is perhaps more significant in the work of Moon is that she identifies certain criteria for determining multi-word items. She states that a multi-word item must have three characteristics: institutionalization, fixedness, and non-compositionality. Institutionalization is “the degree to which a multi-word item is conventionalized in the language”; fixedness is “the degree to which a multi-word item is frozen as a sequence of words”; and, non-compositionality is “the degree to which a multi-word item cannot be interpreted on a word-by-word basis, but has specialized unitary meaning.”

Regardless of whether one follows Lewis or Moon in classifying multi-word items, it is obvious that these items do exist. Indeed, the recognition of multi-word items in the linguistics literature is widespread (Swan 1997:177–78; Laufer 1997a:25; Saeed 1997:59; Field 2003:10). Consequently, defining vocabulary as individual words appears inadequate.

A second problem with defining vocabulary as words is the existence of inflected words and derivatives. The problem of inflected words can be illustrated with an example from Saeed (1997:56), who questions whether the words *walk, walked, walks, and walking* should each be regarded as a separate word or should each simply be seen as an occurrence of the verb *walk*. According to Schmitt, most scholars do not count inflected words as separate items (2001:2), but clearly many theoretical linguists do hold that irregulars and semi-productive forms are stored separately in the mental lexicon. The problem of derivatives is slightly different and can be illustrated by an example from Schmitt (2001:2). He poses the question whether the words *stimulate, stimulative, and stimulation* constitute different words or whether each should be seen as an occurrence of *stimulate*. According to Aitchison (1994:35), scholars differ over whether to count derived forms as separate

items. This difference among scholars is often reflected in modern dictionaries. For example, Aitchison (1994:35) notes that the *Collins Concise English Dictionary* includes an entry for the word *fisher*, while the *Longman Concise English Dictionary* includes the word *fisher* under the term *fish*. I will discuss below whether inflected forms and derivatives should be counted as separate vocabulary in this study. For now, however, considering the existence of inflected words and derivatives, it appears inadequate to equate vocabulary simply with individual words.

At this point the question arises of how linguists have dealt with the problem of defining vocabulary if vocabulary cannot be equated with words. The generally accepted proposal is to define *vocabulary* as *lexical items*, or *lexemes*. These two terms appear to be used synonymously in the linguistics literature (Schmitt 2001:2; Trask 1999:343), and their use is fairly widespread (Field 2003:10; Schmitt 2001:2; Saeed 1997:55; Lewis 1997:255). The *Dictionary of Linguistics and Phonetics* states the following concerning the term *lexeme*: “Its original motivation was to reduce the ambiguity of the term *word*, ... and to devise a more appropriate term for use in the context of discussing a language’s vocabulary” (Crystal 1997:220). With these functions of the term *lexical item* in mind, I will adopt Lewis’ (1997:255) definition of lexical items: “Lexical items are socially sanctioned independent units.” This definition is useful because it allows for multi-word items such as idioms to be included as vocabulary and for inflected forms and derived forms to be considered separately.

A useful approach for inflected forms would be to follow the theoretical linguists. Jackendoff (2003:156–59) and Pinker (1994:119–52) hold that words formed by regular patterns of inflection should not be considered separate items in the mental lexicon, whereas irregulars and semi-productive forms (e.g., *drink – drank*) should. One can follow this line of reasoning for vocabulary learning as well: words formed by regular processes of inflection should not be given their own entries, whereas irregulars and semi-productive forms should. Essentially, this means that words like נָשִׁים (“women”) should be learned separately from נִשְׂאָה (“woman”) since נָשִׁים (“women”) cannot be accounted for by regular inflectional processes. Thus, in this study, regularly inflected forms will generally be excluded, while the small number of irregular forms and semi-productive forms will be included.

Whether or not derived words should be included as lexical items in need of separate study remains a debatable issue; however, it appears necessary in this particular study to maintain derivatives as separate lexical items for two reasons, one due to issues within the study of BH and one due to research within psycholinguistics. First, in the particular case of BH, it appears necessary to maintain derivatives as separate lexical items because the manner in which nouns are derived from verbal stems in BH would be very difficult for beginners to learn (see Landes 2001:1–6). Rather, it would be easier for students to learn derivatives separately.

Second, within the field of psycholinguistics, research has given reason to believe that derivative forms may be stored separately from base forms in the mental lexicon (Aitchison 1994:126–31), though this is not held by all (Cairns 1999:41–43).¹ Aitchison’s (1994:126–31) view, however, seems

¹ Field (2003:58) states that the evidence cited by each side sometimes appears contradictory.

to explain best the data within actual language usage. Aitchison states that if prefixes are stored separately from base forms, then more mistakes in combination should be expected in natural language usage. For instance, if the mental lexicon has separate stores for both the prefix *un-* and the base word *happy*, then more errors like *dishappy* and *non-happy* should be expected in natural language usage than actually occur. Thus, in light of issues within the study of BH and in light of Aitchison's research, derived forms will be taken as separate lexical items in this study.

To conclude this section, vocabulary may be defined as independent units, consisting of individual words (*lemmas*), multi-word units, irregular forms, semi-productive forms, and derived forms. Having established this definition, I will now move on to answering the question of what it means to learn vocabulary.

2.1.1.2 What Does It Mean to Learn Vocabulary?

As in the case of defining vocabulary as words, it is possible to offer a simplistic answer to the question of what it means to learn vocabulary. One could simply define *learning vocabulary* as memorizing the meanings of lexical items. However, upon examination, such a simplistic definition is not adequate in this case either. By way of illustration, I will demonstrate that learning vocabulary involves more than simply memorizing the meanings of lexical items. First, it is entirely possible for a person to learn the meaning of a word and not be able to distinguish between two words in reading. Imagine that a beginner is learning BH vocabulary by using an audio recording without having the written forms of the vocabulary items. The student may learn that the word $\square\aleph$ means "if, then"; however, in reading, the student may encounter the word $\square\psi$ ("with") and believe that it means "if, then" because the words are *synoforms* (Laufer 1997a:26). This problem would occur because the student has only paired the phonological form of the word $\square\aleph$ with its meaning of "if, then." Therefore, learning the word $\square\aleph$ must involve more than memorizing meaning, it at least must involve pairing both the orthographical and phonological form to the word's meaning. This point should raise the question of whether there are still other aspects that might be involved in knowing an item, besides meaning, phonological form, and orthographical form.

Second, imagine that a student has studied a word, can recognize it, but cannot recall the meaning of the word. Is the item known if the student can recognize it? Or must the student be able to recall the meaning in order for the word to be considered learned? What level of knowledge does it take to consider a lexical item "learned"?

These examples illustrate that learning a lexical item involves more than pairing one aspect of an item's form with a meaning. Learning the form of an item may involve levels of understanding, such as a recognition level and a recall level. Scholars within the field of linguistics have approached the question of what it means to learn vocabulary from these two perspectives: aspects of vocabulary knowledge and levels of vocabulary knowledge. Examining these two different perspectives will determine, for the purposes of this study, what is meant by learning a vocabulary item.

Which aspects of knowledge must a student acquire in order to consider an item known? Several systems have been proposed to answer this question. Field (2003:11) cites Levelt as stating that in order for a person to know a word, a person must have knowledge of a word's meaning, syntax, morphology, and phonology.² Nation has proposed that learning a word involves learning a word's meaning(s), written form, spoken form, grammatical behavior, collocations, register, associations, and frequency (Schmitt 2001:5). Nation (2001:35) subsequently proposed another system of aspects of word knowledge that categorizes these aspects into knowing a word's form, meaning, and use. Ellis (1997:123) proposes that the aspects of word knowledge that must be learned are a word's form, input/output lexical specifications, collocations, grammatical class information, semantic and conceptual properties, and meaning representations. Scholars like Nation (2001:35) and Ellis (1997:123) have proposed that different aspects of word knowledge are gained through different types of processes. For instance, some aspects of word knowledge are gained better through implicit learning (e.g., reading for meaning), while other types of word knowledge are gained better through explicit learning (e.g., memorization of paired-associates).

The system that will be followed in this study is the system proposed by Nation, according to which learning vocabulary involves learning an item's meaning(s), written form, spoken form, grammatical behavior, collocations, register, associations, and frequency (Schmitt 2001:5). However, register should be eliminated as a necessary type of knowledge for BH vocabulary due to the vast amount of text necessary to determine register (Hartmann 1981:266).³ Nation's system seems best for the current study because it appears to be the most common system used in the scholarly literature and because it appears comprehensive. Schmitt, who has performed a great deal of research in the area of aspects of vocabulary knowledge, also uses this system proposed by Nation (Schmitt 2001; Schmitt 1998; Schmitt 1999; Schmitt & Meara 1997). The view that learning vocabulary involves more than simply learning meanings has this very important implication: a model for learning BH vocabulary should include each of these aspects of knowledge for the target vocabulary items.

I will briefly examine how this system of learning aspects of vocabulary knowledge would work for the BH root אָמַר. First, a student must learn that אָמַר consists of the consonants *ʾālep̄*, *mēm*, and *rēš*. Along with the written form, one must learn the pronunciation of the root אָמַר in its various inflections, such as *ʾāmar* in the third masculine singular. Then, a student must learn that the root אָמַר means "utter, say." Knowledge concerning the grammatical behavior of אָמַר would consist of

² Despite the pains already taken to define *vocabulary* as *lexical items* and not *words*, the term *word* will be used sometimes in this study, but only because it is used in much of the research that will be cited. This matter will be particularly evident in the examination of the research of Stoffer (1995) who uses *word* often. However, it should be clear that the findings from the examination of the applied linguistics literature will be applied to BH *lexical items* and not simply BH *words*.

³ Subsequent research done after the testing in Chapter 5 of this study suggests that register may in fact be an area of vocabulary knowledge necessary for understanding BH. Van der Merwe (2004) demonstrates that certain lexical items appear to be near-synonyms, differing only with regard to their distribution, i.e., whether the item occurs in poetry or prose.

knowing that it is a verb appearing commonly in a wide range of inflections in the Hebrew Bible. Collocational knowledge about אָמַר might mean knowing that it often occurs in phrases like: כֹּה אָמַר יְהוָה (“Thus says the LORD”) and וַיֹּאמֶר אֱלֹהִים (“and God said”). Knowing associations for אָמַר might consist of knowing that it has associations with roots like דַּבֵּר (“to speak”). Finally, knowing the frequency of אָמַר would consist of knowing that it is one of the most common words in the Hebrew Bible, making it a very important word to learn. This example is perhaps an oversimplification of the matter; however, it serves to illustrate that learning the root אָמַר requires more than memorizing meaning(s). A student must gain various types of knowledge about the word in order for it to be considered “learned.”

The task of conveying so much information for each vocabulary item may seem daunting; however, it is worthwhile to keep in mind several points. First, it is important to realize that some aspects of vocabulary knowledge are best gained through implicit learning activities, such as reading for meaning. The ways in which specific types of vocabulary knowledge are gained will be discussed in more detail later. Second, it is important to note that not all aspects of knowledge about an item will be learned at the same time. Schmitt (2001:5) has shown that gaining the various aspects of knowledge about an item is incremental in nature. For instance, an item’s form and meaning(s) may be learned first; then later an item’s collocations may be learned in reading. Third, it is important to recognize that though the list of various aspects of vocabulary knowledge is helpful, some aspects of vocabulary knowledge are highly interrelated (Schmitt 2001:6). For example, learning an item’s written form, spoken form, and meaning(s) can be highly interrelated.

I will next consider the hypothesis that different levels of knowledge exist for each lexical item. Psychologists have noted that lexical items can either be unknown, familiar, or known (Lowenthal 1971; Durso & Shore 1991; Shore & Durso 1990). This observation is visible in the difference between being able to recall a vocabulary item and only being able to recognize it. Recognition vocabulary would be known as a “multiple choice” vocabulary item in a test, rather than “fill in the blank,” an item that has to be recalled with no choices given. In view of this distinction, what level of knowledge should a student be expected to have about a specific item’s meaning(s)? Laufer and Goldstein (2004) empirically tested degrees of vocabulary knowledge to determine what degree of knowledge is the best predictor of foreign language learning success. Using the recognition versus recall distinction, Laufer and Goldstein proposed four levels of knowledge: passive recognition, active recognition, passive recall, and active recall. The differences among these distinctions can be seen in the chart they developed (Laufer and Goldstein 2004:407) that is reproduced below:

Table 1. Degrees of Vocabulary Knowledge

--	Recall	Recognition
Active (retrieval of form)	Supply the L2 word	Select the L2 word
Passive (retrieval of meaning)	Supply the L1 word	Select the L1 word

In their testing, Laufer and Goldstein (2004:426) determined passive retrieval was the best predictor of foreign language learning success. For instance, a student seeing the word **אָמַר** should be able to recall without multiple choices that the meaning is “he uttered, said.” This may seem counterintuitive since active recall is the most advanced level of knowledge; however, not achieving active recall does not mean that students do not have access to a lexical item. In light of this, scholars like Melka (1997) propose seeing vocabulary knowledge as moving along a continuum from receptive to productive. Receptive knowledge is a necessary starting point. Since passive retrieval has been shown to be the best predictor of success in learning other foreign languages, passive retrieval should be the level of knowledge sought in a model for learning BH vocabulary. An item that can only be recognized should be considered only “partially learned,” to use the terminology of Shore and Durso (1990; Durso & Shore 1991). This partial knowledge, though necessary at first, should not be considered successful learning of vocabulary.

To summarize sections 2.1.1.1 and 2.1.1.2: With vocabulary defined in terms of *lexical items*, the concept of vocabulary learning to be used in this study will be, the acquisition of any aspect of knowledge about a lexical item, including its meaning(s), written form, spoken form, grammatical behavior, collocations, associations, and frequency, with the learning of an item’s meaning being such that it can be passively recalled. Thus, the view of vocabulary learning adopted in this study is that learning vocabulary involves more than memorizing paired-associates, though paired-associate learning may play a part in vocabulary learning. In the next section, I will consider what language learning strategies (=LLSs) are and apply the concept of LLSs to the above-defined concept of vocabulary learning.

2.1.1.3 *What are Language Learning Strategies?*

As mentioned above, Nation (2001:217) notes that it is difficult to define what VLSs are. This difficulty likely stems from the difficulty in defining LLSs in general. Macaro (2001:18) states, “What learner strategies are has been difficult to define at an international level and with full consensus.” Dornyei and Skehan (2003:610) also note this difficulty, quoting Ellis as saying: “Definitions of learning strategies have tended to be *ad hoc* and atheoretical.” Yet Dornyei and Skehan also recognize that LLSs have a great deal of potential benefit (2003:611). They do not call for an end to research on LLSs, only for a more well-founded theoretical approach (622). In this section, I will examine how scholars of applied linguistics have attempted to define LLSs in general; I will then combine the findings of the previous sections with those of the present section to propose a definition of VLSs. The definition of VLSs that will be proposed is likely to be one that Dornyei and Skehan would see as an *ad hoc* definition; nevertheless, in view of their recognition of the potential benefit of LLSs, I will propose an *ad hoc* definition rather than passing over the potential practical usefulness of VLSs.

In a helpful section on defining LLSs, Macaro (2001:17) lists several definitions offered by various scholars:

Learning strategies are the behaviours and thoughts that a learner engages in during learning that are intended to influence the learner's encoding process (Weinstein & Mayer 1986:315).

Learning strategies are techniques, approaches or deliberate actions that students take in order to facilitate the learning and recall of both linguistic and content area information (Chamot 1987:71).

Learner strategies refers to language learning behaviours learners actually engage in to learn and regulate the learning of a second language ... what they know about the strategies they use ... what they know about aspects of their language learning other than the strategies they use (Wenden 1987:6).

Second language learner strategies encompass both second language learning and second language use strategies. Taken together they constitute the steps or actions consciously selected by learners either for the learning of a second language, the use of it, or both (Cohen 1998:5).

Specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective and more transferable to new situations (Oxford 1990:8).

These definitions are but a few that have been proposed by second language acquisition scholars, and they indicate (as observed by Macaro) the lack of consensus in defining what LLSs are. It is difficult even to compare the definitions because the scholars involved do not agree on the boundaries; for example, whether or not aspects of communication should be included in defining LLSs, and whether or not a distinction should be made between LLSs and other learner strategies (Macaro 2001:18–20).

The first of these problems, whether or not aspects of communication should be included in definitions of LLSs, has been addressed to some degree. Hsiao and Oxford (2002:378) comment as follows on the question of whether or not LLSs should be distinguished from language use strategies (e.g., strategies involving communication whether written or oral):

A possible approach, as Ellis (1994) and Cohen (1998) have pointed out is to differentiate between strategies for learning L2s and strategies for using them. This distinction is heuristically valuable as a reminder that L2 learning and L2 use are not identical. However, in actual practice it is often difficult and impossible to separate learning the L2 from using the L2. Does the learner stop learning when he or she puts the language into use while writing a letter in the L2, reading L2 newspapers, or conversing with a native speaker? One might argue that it is in precisely such instances that the alert learner might stand to learn the most...

In light of these comments, establishing separate definitions for LLSs and language use strategies does not appear necessary or desirable. Thus, language usage, such as extensive reading, should be included with other VLSs that might be used for the learning of vocabulary items.

The second problem noted by Macaro (2001:19–20), whether or not a distinction exists between LLSs and other more general learner strategies, appears to introduce more confusion than clarity. Macaro cites no other scholar who sees the need to distinguish between LLSs and other learner strategies. Macaro even states that most linguists appear to use the terms LLSs and learner strategies synonymously. As a result, for the sake of clarity, it does not appear necessary to provide separate definitions for LLSs and learner strategies.

With these two problems addressed, it appears that the definitions proposed by Weinstein and Mayer, Chamot, Wenden, and Oxford (above) could provide the basis for a tentative, general definition of LLSs. In choosing one of these definitions, or in developing a definition based on one of them, it would be helpful to note one of the core elements in most definitions of LLSs. Nation (2001:217) states that in order for a strategy to be chosen, it must “increase efficiency” in vocabulary learning. This element of “increased efficiency” is explicit in the definitions of Chamot (1987) and Oxford

(1990) (cited above, from Macaro 2001), as evidenced by expressions like “facilitate,” “easier,” and “more effective.” Considering that a definition of LLSs should include an aspect of increased efficiency, the definition of LLSs to be used in this study will be one formulated by Oxford (2003:274; this expands upon Scarcella & Oxford 1992:63) that is more recent and more language specific than the one offered above (Oxford 1990): “L2 learning strategies are ‘specific actions, behaviors, steps, techniques [or thoughts] ... used by students to enhance their own learning’.”

Against this background, I will now develop a definition of VLSs by combining the findings from this section with those from the previous two sections. To summarize briefly: First, vocabulary was defined as independent units that encompass both multi-word units and individual words, including derived words. Second, vocabulary learning was defined as learning a particular lexical item’s meaning(s), written form, spoken form, grammatical behavior, collocations, associations, and frequency, with the learning of an item’s meaning reaching the level of passive recall. Third, “L2 learning strategies are ‘specific actions, behaviors, steps, techniques [or thoughts] ... used by students to enhance their own learning’” (Oxford 2003:274 expanding upon Scarcella & Oxford 1992:63). Thus, the definition of VLSs to be used in this study may be reformulated as follows: VLSs are specific actions, behaviors, steps, techniques or thoughts used by students to enhance their own learning of a lexical item’s meaning(s), written form, spoken form, grammatical behavior, collocations, associations, and/or frequency, with the learning of the lexical item’s meaning being such that it can be passively recalled.

2.1.2 Choosing a Taxonomy of Vocabulary Learning Strategies

2.1.2.1 Taxonomies of Language Learning Strategies

In this section, I will first discuss different taxonomies that have been proposed for LLSs in general. The reasoning behind this discussion is that LLS taxonomies provide background for VLS taxonomies, and LLS taxonomy research will aid in choosing a VLS taxonomy for this study. After discussing these classification systems, I will examine the primary options for a VLS taxonomy to be used in this study.

Hsiao and Oxford (2002) identify three major classification systems for LLSs in general. These taxonomies are found in Rubin (1981), O’Malley and Chamot (1990), and Oxford (1990). Each of these taxonomies will be discussed separately below. Rubin’s system for classifying LLSs places strategies in two separate, broad categories: direct strategies and indirect strategies. Rubin classifies clarification/verification, monitoring, memorization, guessing/inductive inferencing, deductive reasoning, and practice as direct strategies. She classifies creating opportunities for practice and production tricks as indirect strategies. This classification system was helpful as a starting point for other classification systems (Hsiao & Oxford 2002:370). The usefulness of Rubin’s taxonomy in comparison with the other taxonomies will be made clear below.

A second classification system noted by Hsiao and Oxford (2002) is the taxonomy proposed by O'Malley and Chamot (1990:46). This system provides for three categories: metacognitive strategies, cognitive strategies, and social/affective strategies. Metacognitive strategies consist of selective attention, planning, monitoring, and evaluation. Cognitive strategies consist of rehearsal, organization, inferencing, summarizing, deducing, imagery, transfer, and elaboration. Social/affective strategies consist of cooperation, questioning for clarification, and self-talk. The system proposed by O'Malley and Chamot is similar to the third classification system, which was proposed by Oxford (1990). The main difference is that Oxford further breaks down several of the O'Malley and Chamot categories and adds one more category. Since the two taxonomies are very similar, the only way that Hsiao and Oxford (2002:369) saw to determine which of the three taxonomies might be better was through empirical testing. After describing the system proposed by Oxford, I will discuss the results of the empirical testing done to determine which existing taxonomy was best.

Oxford (1990:18–21) divides the strategies into two major categories: direct and indirect strategies. (These two major categories are then divided into six subcategories). The direct category includes memory strategies, cognitive strategies, and compensation strategies. Memory strategies involve creating mental linkages, applying images and sounds, reviewing well, and employing action. Cognitive strategies involve practicing, receiving and sending messages, analyzing and reasoning, and creating structure for input and output. And compensation strategies involve guessing intelligently and overcoming limitations in speaking and writing. The indirect category includes metacognitive strategies, affective strategies, and social strategies. Metacognitive strategies consist of centering learning, arranging and planning learning, and evaluating learning. Affective strategies consist of lowering anxiety, encouraging oneself, and taking one's emotional temperature. Social strategies consist of asking questions, cooperating with others, and empathizing with others. As stated above, Oxford's approach is similar to the approach of O'Malley and Chamot (1990). Oxford divides O'Malley and Chamot's cognitive strategies into cognitive strategies and memory strategies and divides O'Malley and Chamot's social/affective strategies into social strategies and affective strategies. Oxford only adds one other category in compensation strategies. To say that these differences are the only differences would be an oversimplification; however, these are the major differences (Hsiao & Oxford 2002:371).

Hsiao and Oxford (2002) empirically examined the three aforementioned systems using a measurement tool called the Strategy Inventory for Language Learning (SILL). The taxonomies were analyzed in two ways: in comparison with one another and individually. On a comparison basis, the research found that both the O'Malley and Chamot system and the Oxford system were better than the Rubin system with regard to the survey criteria (Hsiao & Oxford 2002:377). Also, the research found that the Oxford taxonomy was better than the O'Malley and Chamot taxonomy (Hsiao & Oxford 2002:377–78). Interestingly though, on an individual basis Hsiao and Oxford found that none of the three systems provided a fully adequate taxonomy (378). Hsiao and Oxford then proposed that taxonomies might be improved by separating language use strategies and LLSs, by distinguishing

between second language learning strategies and foreign language learning strategies, by reclassifying certain items within present taxonomies, by being more consistent in specificity and generality, and/or by distinguishing between strategies for various language tasks, e.g., separate taxonomies for grammar learning strategies and VLSs (Hsiao & Oxford 2002:378–81).

In light of the empirical testing performed by Hsiao and Oxford (2002) and in light of the available VLS taxonomies in the applied linguistics literature, it appears that there are three primary options in choosing a taxonomy of VLSs to use in this study. First, a taxonomy of VLSs that is based solely on the aforementioned taxonomy of Oxford (1990) could be chosen. Second, a taxonomy that is a modified version of Oxford (1990) could be chosen. Third, a taxonomy that has been developed separately for the task of learning vocabulary that is not based on any of the above systems could be chosen. Each of these options will be examined in the following section.

2.1.2.2 Options in Choosing a Taxonomy of Vocabulary Learning Strategies

The first option in choosing a taxonomy of VLSs would be to choose or develop a taxonomy that directly applies Oxford's (1990) general taxonomy of LLSs to the task of learning vocabulary. No such taxonomy for VLSs exists, so it would have to be developed. Though this approach would be possible, it does not appear that it would be beneficial. Schmitt (1997) notes several problems that would arise from applying Oxford's general taxonomy directly as a taxonomy for VLSs. Particularly, Schmitt claims, "Oxford's classification system was unsatisfactory in categorizing vocabulary specific strategies in several respects" (1997:205). Also, since Oxford's system emerged from testing as the best existing approach for classifying LLSs (Hsiao & Oxford 2002), it does not appear that directly applying either of the other two systems would work very well either.

A second option would be to choose Schmitt's (1997) taxonomy, which is based upon Oxford's (1990) taxonomy, though with several adaptations. Schmitt's taxonomy appears to be the only VLS taxonomy based upon a general taxonomy of LLSs. Schmitt tries to make Oxford's system more vocabulary specific. The adaptations made by Schmitt were to add a category of strategies used for the determination of a word's meaning and to eliminate the categories of affective strategies and compensation strategies. At this point, Schmitt's proposal must remain open as an option for a possible VLS taxonomy; however, the taxonomy proposed by Schmitt does have one major weakness. In the empirical testing done by Hsiao and Oxford (2002:377–78), it was the presence of the categories of affective strategies and compensation strategies that appeared to make Oxford's classification system better than the O'Malley and Chamot system. By eliminating these categories, Schmitt may have decreased the usefulness of his taxonomy.

The third option for choosing a taxonomy of VLSs would be to accept a system of classification that is vocabulary specific. Two major vocabulary specific classification systems have been proposed, one by Nation (2001) and one by Stoffer (1995). The classification system proposed by Nation consists of three major categories: planning strategies, source strategies, and process strategies. Planning strategies involve "choosing what to focus on and when to focus on it"; source strategies involve

“finding information about words”; and, finally, process strategies involve “establishing knowledge” (2001:218). The primary difference in the development of Nation’s system appears to be that Nation attempted to separate strategies based upon the type of knowledge in focus (2001:218). His attempt to add a focus on type of word knowledge is a strength in Nation’s approach, especially when one considers the various types of vocabulary knowledge discussed in section 2.1.1.2 above. Nation’s approach appears to maintain many of the types of strategies found in most other taxonomies; however, a possible weakness is that Nation does not include any affective strategies. Again, affective strategies were a part of Oxford’s (1990) system that added to its usefulness (Hsiao & Oxford 2002:377–78). Therefore, though Nation’s approach does have one strength, it also has one significant weakness.

Stoffer (1995) proposes a classification system that has one major advantage over the others in that it is based upon empirical testing (Schmitt 1997:204–05). Oxford’s (1990) system was tested (Hsiao & Oxford 2002) only after its development. The empirical basis of Stoffer’s taxonomy makes it less reliant on the intuitions of the researcher, though some subjectivity still remains. The result of Stoffer’s research is a taxonomy that appears much simpler than the other classification systems. Stoffer includes nine categories of strategies: strategies involving authentic language use, strategies involving creative activities, strategies used for self-motivation, strategies used to create mental linkages, memory strategies, visual/auditory strategies, strategies involving physical action, strategies used to overcome anxiety, and strategies used to organize words (Schmitt 1997:205). It appears that strategies from all six categories of Oxford’s system could be placed somewhere in these nine categories. This approach then does not suffer from the weakness of not having a place for all the strategy categories named by Oxford.

The question now is which of the three systems for VLS classification, Schmitt (1997), Nation (2001), or Stoffer (1995), should be chosen for this study. It appears from the applied linguistics research that Stoffer’s taxonomy provides the most promising system for classifying VLSs. Schmitt, who developed one of the other classification systems, even admits this possibility: “Recent research by Stoffer (1995) shows considerable promise in providing an empirical basis for category assignment” (1997:204). Yet Schmitt opts for a taxonomy based on Oxford’s system because of its “more established” nature (1997:205). However, the promise of Stoffer’s approach seems more appealing here than the established nature of Oxford’s (1990) approach, especially since research subsequent to Schmitt (1997; see Hsiao & Oxford 2002) suggests that a better approach to LLSs in general could be developed than the approach proposed by Oxford. The absence of affective strategies in Schmitt’s taxonomy also seems to be a significant weakness. Thus, Schmitt’s taxonomy will not be used in this study.

In choosing between Nation’s (2001) taxonomy and Stoffer’s (1995), Nation’s approach does have the appeal of including word knowledge aspects; however, Nation’s approach is not based on empirical data, nor does it include affective strategies. Another potential problem with Nation’s taxonomy is that it does not offer a wide variety of strategies for pairing form and meaning. Because Stoffer’s

system is based upon empirical data and because her system contains affective strategies and a wider variety of strategies for pairing form and meaning, her approach will be used instead of Nation's. Yet in choosing Stoffer's approach, aspects of word knowledge will also be kept in mind in determining what strategies to maintain as useful. It should be noted as well that Stoffer's taxonomy is not without problems. Potential weaknesses within Stoffer's taxonomy are a small degree of overlap among categories and a certain degree of subjectivity in interpreting and titling categories, though the subjectivity is arguably far less than in the taxonomies proposed by Schmitt (1997) and Nation (2001). Still, the potential problems within Stoffer's approach seem to be less troublesome than those within the other approaches. These problems will be discussed below as I examine Stoffer's taxonomy in greater detail.

2.1.2.3 Stoffer's Taxonomy of Vocabulary Learning Strategies

Since Stoffer's (1995) taxonomy will be assumed as the basis for examining VLSs in this study, I will now focus on it more closely. First, I will discuss the methodology of Stoffer's study along with the strengths and weaknesses of the methodology. Second, I will discuss the taxonomy resulting from Stoffer's study. Third, I will briefly discuss a minor change that I will make to Stoffer's taxonomy as it will appear in the remainder of the present study. Unless otherwise noted, all the information to follow comes from Stoffer (1995).

Stoffer's methodology involved issuing a survey instrument called the Vocabulary Learning Strategies Inventory to foreign language students at the University of Alabama. After collecting the data, Stoffer performed a statistical test called a *principal components factor analysis with varimax rotation* and interpreted the principal components. Each of these steps in the process will now be discussed in more detail.

Stoffer first developed the Vocabulary Learning Strategies Inventory by looking at the applied linguistics material on LLSs and VLSs until 1995 (1995:26–71). Fifty-three strategies that arose in the survey of literature were included as a part of her inventory (1995:171–79). Students had to rate each strategy from A to E with regard to how often they used a strategy, with the scale being: A=Never, B=Seldom, C=Sometimes, D=Often, and E=Always (1995:171–79).

The students to whom Stoffer administered the survey were a wide variety of foreign language students at the University of Alabama. These students were taking introductory courses in "French, German, Japanese, Russian, or Spanish, with a concentration in Romance languages due to popularity and department size" (1995:100). The focus in the design on introductory students could mean that the taxonomy will be particularly helpful in this study because the model to be developed has introductory level students of BH in mind. The sample size for the inventory was 688 students (1995:119). This sample size is, by far, large enough for the statistical procedure of principal components factor analysis (Stevens 1986:345).

The statistical procedure of principal components factor analysis with varimax rotation requires clarification at this point. This procedure will be described along with a discussion of its strengths and weaknesses. Because of the nature of this study, I will avoid going too deeply into theoretical detail. For a more detailed theoretical description of principal components factor analysis with varimax rotation, see Stevens (1986:337–72) and Tabachnick and Fidell (2001:582–652).

Tabachnick and Fidell (2001) provide a good introduction to principal components factor analysis, or what they refer to simply as “principal components analysis”. They state:

Principal components analysis (PCA) and factor analysis (FA) are statistical techniques applied to a single set of variables when the researcher is interested in discovering which variables in the set form coherent subsets that are relatively independent of one another. Variables that are correlated with one another but largely independent of other subsets of variables are combined into factors. Factors are thought to reflect underlying processes that have created the correlations among variables (2001:582).

Thus, in Stoffer’s study, the VLSs in her inventory formed a set of variables. The categories of strategies, then, are the “factors” reflecting “underlying processes that have created correlations among variables” (Tabachnick & Fidell 2001:582). According to Tabachnick and Fidell (2001:582–83), the goals of principal components analysis:

... are to summarize patterns of correlations among observed variables, to reduce a large number of observed variables to a smaller number of factors, to provide an operational definition (a regression equation) for an underlying process by using observed variables, or to test a theory about the nature of underlying processes.

In Stoffer’s study, the particular goal was “to reduce a large number of observed variables to a smaller number of factors” to use this terminology of Tabachnick and Fidell (2001:582).

After Stoffer performed the principal components factor analysis, she also included a varimax rotation. Stevens (1986:342–43) describes the concept of rotations as follows:

Although principal components are fine for summarizing most of the variance in a large set of variables with a small number of components, often the components are not easily interpretable. The components are artificial variates designed to maximize variance accounted for, not designed for interpretability.

To aid in interpreting, there are various so-called rigid rotations that are available. They are rigid in the sense that orthogonality (uncorrelatedness) of the components is maintained for the rotated factors.

In simplest terms, the rotation is for the purpose of “increasing the interpretability of components” (Stevens 1986:342). One type of rotation, quartimax rotation, is used to make sure that each variable “loads mainly on one factor” (Stevens 1986:343). Stoffer (343) opted for a second type of rotation, varimax rotation, described below:

Varimax - Kaiser (1960) took a different tact. He designed a rotation to clean up the factors. That is, with his rotation each factor tends to load high on a smaller number of variables and low or very low on the other variables. This will generally make interpretation of the resulting factors easier.

One problem that Stevens notes with varimax rotation is that the rotation generally destroys the “maximum variance property” of the original components; however, he concludes that being able to interpret the factors is more important than accounting for the variance (1986:343).

Since this statistical procedure is the one used by Stoffer, it is necessary to evaluate its weaknesses and strengths. Tabachnick and Fidell (2001) recognize three possible weaknesses of the principal components analysis. First, they note that there is “no criterion variable against which to test the solution” (2001:583). In other words, there appears to be no objective way of determining whether the resulting factors are actually correct. Second, they note concerning rotations that there are “an infinite number of rotations available” (2001:583). This problem does leave a degree of subjectivity in the principal components analysis. As stated above, the empirical procedure performed by Stoffer could not eliminate all subjectivity from the VLS taxonomy. Third, Tabachnick and Fidell recognize that factor analysis is “frequently used in an attempt to ‘save’ poorly conceived research. If no other statistical procedure is applicable, at least data can usually be factor analyzed” (2001:583). Tabachnick and Fidell, however, do conclude that principal components analysis should be seen as useful in spite of these problems. The main criteria for deciding whether or not a particular principal components analysis is useful is that “A good PCA or FA ‘makes sense’; a bad one does not” (2001:583). Stevens, despite its perceived weaknesses, recognizes principal components factor analysis as a “psychometrically sound procedure” (1986:338). The point here is simply to realize that in performing a principal components analysis, absolutes should not be expected with regard to factors. One must allow for a certain amount of ambiguity with regard to the procedure. Thus, with reference to Stoffer’s classification system, it must be admitted that her system is likely not perfect; however, the system does have a level of empirical grounding, not being primarily intuitive as are the other available VLS taxonomies.

Having discussed Stoffer’s methodology, I will now discuss the actual taxonomy that resulted after she performed the principal components factor analysis with varimax rotation. The procedure resulted in a nine category taxonomy. Below, each of the categories, as well as the strategies that fell into each of the categories, is listed:

Factor 1: Strategies involving authentic language use	Factor 2: Strategies involving creative activities	Factor 3: Strategies used for self-motivation
Read L2 newspapers and magazines	Use computer program to practice words	Enjoy learning new vocabulary
Read L2 literature and poetry	Record words on tape and listen	Feel successful when learning new words
Watch L2 movies	Organize new words on word processor	Encourage myself when afraid of mistakes
Listen to L2 radio programs	Watch videos made for L2 learners	Pay attention to speech
Make up conversations with L2 speaker	Write poetry using new words	Aware of incorrect use
Practice in conversation with L2 speaker	Physically act out new words	Quiz myself or have others quiz me
Write letters using new words	Use color-coded flashcards (genders)	Make up a sentence with each new word
Make collages with related words	Link words in list by creating a story	Picture myself using word in situation

Link words in a list by creating a story	Write letters using new words	Try to relax when afraid of using word
Write poetry using new words	Make collages with related words	Use brainstorming to recall words
Picture myself using word in situation	Use pantomime and gestures to practice	
Make up a sentence with each new word	Use brainstorming to recall words	
	Practice words by using real objects	
Factor 4: Strategies used to create mental linkages	Factor 5: Memory strategies	Factor 6: Visual/auditory strategies
Link word to L1 word similar spelling	Use flashcards	Arrange words on page to form patterns
Link word to similar sounding L1 word	Repeat new word aloud several times	Sing words or grammar paradigms
Create links with already known words	Write down new words over and over	Draw pictures of new words
Learn related topics at the same time	Review frequently	Use rhymes to remember new words
Relate new words to myself	Concentrate hard to avoid distractions	Give myself reward or treat
Learn easy words first	Quiz myself or have others quiz me	Talk to someone about feelings
Group new words by topic	Break lists into smaller parts	Associate with preceding/following word
Use natural associations (opposites)	Learn easy words first	Use color-coded flashcards (genders)
	Use rhymes to remember new words	
Factor 7: Strategies involving physical action	Factor 8: Strategies used to overcome anxiety	Factor 9: Strategies used to organize words
Use pantomime and gestures to practice	Notice when tense or nervous	Group words by grammatical class
Practice word by using real objects	Try to relax when afraid of using word	Break words into its parts (prefix, root)
Physically act out new words	Encourage myself when afraid of mistakes	Group new words by topic
Visualize new words	Talk to someone about feelings	Use natural associations (opposites)
Relate new words to myself	Learn easy words first	Break lists into smaller parts
Draw pictures of new words	Give myself a reward or treat	Use flashcards
Repeat new word aloud several times		
Use rhymes to remember new words		

This taxonomy has several interesting characteristics. First, it should be noticed that each strategy is not confined to only one category. This repetition of items is due to Stoffer's choice of the varimax rotation over the quartimax rotation. With the quartimax rotation, each variable would have been contained within only one factor. The question then arises: Should the appearance of some strategies within several categories be seen as a problem? The answer appears to be "no." In his discussion of

Oxford's classification of general LLSs, Schmitt (1997:205) notes that such ambiguity can be expected:

For example, *Interacting with native speakers* is obviously a Social Strategy, but if it is part of an overall language learning plan, it could also be a Metacognitive Strategy. As previously mentioned, strategies are affected by a number of factors, and different intended purposes for a strategy in different situations can affect its classification.

Since different strategies can have different classifications depending upon a number of factors and different purposes, a classification system must provide for a particular strategy to appear in more than one category. Schmitt later agrees with Oxford that imprecision in classifying strategies may not be desirable, but because strategy research is in its infancy, categories are "fluid and open to debate" (1997:206). Therefore, even though having strategies in more than one category may not be ideal, it seems necessary at this point to allow for such fluidity in categorization.

A second characteristic of Stoffer's taxonomy is that some strategies do not fit the description of the factor. For instance, in Factor 6, the category of visual/auditory strategies, strategies such as singing words, giving oneself a reward, and talking to someone about feelings may not seem like visual or auditory strategies, but rather like verbal strategies. However, one must keep in mind that this is where the subjective aspect of principal components analysis emerges, because the labels given to the factors are titles that are provided by Stoffer after examining the different strategies in the category. When Stoffer titled Factor 6, she may have had in mind that including "auditory" in the title would include verbal actions taken by the student. If auditory strategies were to include verbal actions on behalf of the student, then these three strategies would seem to fit. Singing words would surely constitute a verbal action taken by a student. Giving a reward might come in the form of the student congratulating himself or herself. Talking to someone else about feelings in vocabulary learning would also constitute a verbal action. Therefore, strategies that may not appear to fit very well can at least partially be explained by the fact that the titles of the factors are only those proposed by the researcher and that the titles themselves are not empirically grounded.

In addition, if strategies do not seem to fit category titles very well, it must be remembered that this classification system is empirically based, but still subjective to some degree. Along with the naming process, the rotation process introduces some subjectivity. Therefore, as Schmitt (1997:205) suggests, it is necessary to accept some ambiguity. The taxonomy then is not to be considered perfect, but it will constitute an adequate framework within which to examine whether or not particular VLSs may be useful for developing a model for students of BH to learn vocabulary.

Before leaving this discussion of Stoffer's taxonomy, I would like to introduce one change to the taxonomy that arises from research in statistics. In developing her taxonomy, Stoffer (1995:124) chose a factor loading of .30 as a cutoff point for an item being included in a factor. The reason that Stoffer most likely chose .30 was for all of the strategies in her inventory to be included in a category. However, both Stevens (1986) and Lindeman, Merenda, and Gold (1980) call for the use of a factor loading of .40 as a cutoff point for an item being included in a factor.

Stevens (1986:345) states:

It would seem that one would want in general a variable to share *at least* 15% of its variance with the construct (factor) it is going to be used to help name. This means only using loadings which are .40 or greater for interpretation purposes.

Lindeman, Merenda, and Gold (1980:273) state:

The choice of .4, rather than .3 or .5, may seem arbitrary, but is supported by quite a bit of empirical evidence that variables with coefficients of at least .4 (in absolute value) make meaningful contributions to defining factors, whereas those with lesser values usually do not.

In light of these findings, I have decided for the purposes of the present study to remove from Stoffer's factors any items with factor loadings of less than .40. The resulting classification system appears below:

Factor 1: Strategies involving authentic language use	Factor 2: Strategies involving creative activities	Factor 3: Strategies used for self-motivation
Read L2 newspapers and magazines	Use computer program to practice words	Enjoy learning new vocabulary
Read L2 literature and poetry	Record words on tape and listen	Feel successful when learning new words
Watch L2 movies	Organize new words on word processor	Encourage myself when afraid of mistakes
Listen to L2 radio programs	Watch videos made for L2 learners	Pay attention to speech
Make up conversations with L2 speaker	Write poetry using new words	Aware of incorrect use
Practice in conversation with L2 speaker	Physically act out new words	
Write letters using new words	Use color-coded flashcards (genders)	
Make collages with related words	Link words in list by creating a story	
Link words in a list by creating a story	Write letters using new words	
Write poetry using new words	Make collages with related words	
Factor 4: Strategies used to create mental linkages	Factor 5: Memory strategies	Factor 6: Visual/auditory strategies
Link word to L1 word similar spelling	Use flashcards	Arrange words on page to form patterns
Link word to similar sounding L1 word	Repeat new word aloud several times	Sing words or grammar paradigms
Create links with already known words	Write down new words over and over	Draw pictures of new words
Learn related topics at the same time	Review frequently	Use rhymes to remember new words
Relate new words to myself	Concentrate hard to avoid distractions	Give myself reward or treat
	Quiz myself or have others quiz me	Talk to someone about feelings
	Break lists into smaller parts	

Factor 7: Strategies involving physical action	Factor 8: Strategies used to overcome anxiety	Factor 9: Strategies used to organize words
Use pantomime and gestures to practice	Notice when tense or nervous	Group words by grammatical class
Practice word by using real objects	Try to relax when afraid of using word	Break words into its parts (prefix, root)
Physically act out new words	Encourage myself when afraid of mistakes	Group new words by topic
Visualize new words	Talk to someone about feelings	Use natural associations (opposites)
Relate new words to myself		

The strategies of picturing oneself using a word in a situation, making up a sentence including the new word, using brainstorming to recall words, learning easy words first, and associating a word with a preceding/following word no longer appear in the taxonomy. This fact does not present much of a problem considering that each of these strategies would have been eliminated anyway. Picturing oneself using a new word and making up a sentence using a new word imply a communicative approach to learning that may not be well suited to learning BH (see section 1.2.2 above). Brainstorming to recall words might imply that serial learning had taken place. In other words, the brainstorming might lead to a learner trying to remember a word in relation to the other words that were learned alongside it. The strategies maintained below are those that avoid the effects of serial learning (see below for the negative effects of serial learning), making brainstorming of little value. Associating words with preceding or following words certainly implies serial learning as well. A discussion of learning easy words first and why this strategy should be rejected will appear in the discussion of the strategy of grouping words by grammatical class. Therefore, dropping these strategies should not present a significant problem in light of the examination of particular strategies that is to follow.

This concludes the discussion of Stoffer's taxonomy and the version of Stoffer's taxonomy that will be used throughout the remainder of this study. I will now briefly summarize the main findings to this point. First, VLSs are specific actions, behaviors, steps, techniques or thoughts used by students to enhance their own learning of a lexical item's meaning(s), written form, spoken form, grammatical behavior, collocations, associations, and/or frequency, with the learning of the item's meaning being such that it can be passively recalled. Second, VLSs consist of:

- | | |
|---|--|
| 1 Strategies involving authentic language use | 5 Memory strategies |
| 2 Strategies involving creative activities | 6 Visual/auditory strategies |
| 3 Strategies used for self-motivation | 7 Strategies involving physical action |
| 4 Strategies used to create mental linkages | 8 Strategies used to overcome anxiety |
| | 9 Strategies used to organize words |

In the following section, I will examine factors influencing the efficacy of strategies in general and in particular, especially with regard to efficacy for learning BH vocabulary.

2.1.3 Factors Affecting the Efficacy of Vocabulary Learning Strategies

Before discussing factors affecting the efficacy of strategies, one initial question that deserves attention is whether or not LLSs and VLSs can be taught. If the strategies cannot be taught, then a study of the factors affecting the efficacy of strategies and a study of what strategies would be best for students learning BH vocabulary would be of no value. Concerning this question, Stoffer (1995:42–44) cites two studies in O'Malley, Chamot, Stewner-Manzanares, Russo, and Küpper (1985) and Chamot (1993) that confirm that LLSs can be taught. In fact, Stoffer's own study seems to confirm that VLSs can be taught since in her study the most prominent indicator of strategy use was whether or not a student had been instructed in strategy use. Stoffer (1995:143) states, "As expected the best single predictor for strategy use was previous vocabulary learning strategy instruction." Therefore, it appears that VLSs can indeed be taught.

Since it is now clear that VLSs can indeed be taught, I can proceed to address factors that might affect their efficacy, whether in general or in particular. The two most important factors affecting the efficacy of strategies are individual differences among students and the nature of the target language.

2.1.3.1 Student Differences

Four primary individual differences among students that may affect the efficacy of VLSs are motivation, gender, learning style, and level of study. Motivation is perhaps the most important individual difference. After conducting an empirical study on factors affecting learning strategy usage, Oxford and Nysikos (1989:294) state: "The degree of expressed motivation to learn the language was the most powerful influence on strategy choice ... The more motivated students used learning strategies of all these kinds more often than did the less motivated students." Motivation will likely affect the usefulness of VLSs at two different levels: a general level and a particular level. First, motivation will be at work at a general level in the sense that a student's motivation for learning the language as a whole will affect the usefulness of VLSs as a whole. Second, motivation will be at work at a particular level in the sense that a student may not be motivated to use a particular VLS, based upon a perception of its usefulness or a perception of the difficulty of using it. A discussion of each of these levels at which motivation is at work will follow; however, it will first be necessary to determine what the term *motivation* means in the linguistic and psychological literature.

Dornyei and Skehan (2003:614) provide the following answer to the question "What is motivation?":

In the most general sense, motivation research addresses the basic question of why humans think and behave as they do; that is, motivation concerns the direction and magnitude of human behavior, or, more specifically (i) the choice of a particular action, (ii) the persistence with it, and (iii) the effort expended on it. In broad terms, motivation is responsible for *why* people decided to do something, *how long* they are willing to sustain the activity, and *how hard* they are going to pursue it.

Two important features of this definition are that motivation concerns the reasons why people take particular actions and that motivation concerns an aspect of time.

There are various reasons why language learners decide to learn a language. Oxford and Shearin (1994) note that for many years social-psychologists have investigated two types of motivation, integrative motivation and instrumental motivation; however, Oxford and Shearin also suggest that social-psychologists have neglected a large variety of other types of motivation specific to individual students. Integrative motivation involves a student wanting to be integrated into the L2 culture and possibly wanting to become like the L2 speakers (Csizér & Dornyei 2005:20). Instrumental motivation would include a student learning a language for some benefit, such as for business- or job-related reasons (Oxford & Shearin 1994:12). Dornyei and Skehan (2003) state that the focus on integrative and instrumental motivation has been a result of social-psychologists attempting to find underlying constructs in motivation; however, they also note the problem recognized by Oxford and Shearin, namely that the focus on integrative and instrumental motives has caused some aspects of motivation to be ignored. Dornyei and Skehan suggest that a better approach to motivational factors is to use “comprehensive rather than reductionist models that cover a wide range of social motives...” (2003:616). No scholar, as yet, has proposed a comprehensive list of the motives that students have in learning a language. Yet even in spite of this lack, Dornyei and Csizér in their “Ten Commandments for Motivating Language Learners: Results of an Empirical Study” (1998) and Dornyei in her *Motivational Strategies in the Language Classroom* (2001) have offered helpful suggestions for teachers, some of which may be useful in the development of a model for learning BH vocabulary. These suggestions will be discussed in more detail in Chapter 4.

A second important feature of this definition of motivation is that motivation has an aspect of time to it. Dornyei (2000:521) states that until fairly recently, the aspect of time in motivation had been somewhat ignored as “motivation has traditionally been treated as a relatively stable emotional or mental state (measurable by tapping into it at one point of time, e.g., by administering a questionnaire).” Dornyei and Skehan (2003:617) recognize that time has an important role to play in motivation. They state:

During the lengthy process of mastering certain subject matters, motivation does not remain constant, but is associated with a dynamically changing and evolving mental process, characterized by constant (re)appraisal and balancing of the various internal and external influences that the individual is exposed to. Indeed even within the duration of a single course of instruction, most learners experience a fluctuation of their enthusiasm/commitment, sometimes on a day-to-day basis.

Thus, as applied to the present study, it should be clear that even though a student may be motivated to learn vocabulary at the beginning of a course of study, that does not necessarily mean the student will be motivated to learn vocabulary in the middle or at the end of the course. Therefore, a model for learning BH vocabulary, especially one that will focus on learning strategies, must keep motivation and motivational factors before the student throughout the process of acquiring the vocabulary of the language.

Having clarified the term *motivation* and two of its important features, I will now examine how a student’s motivation might affect the efficacy of VLSs in general for learning BH vocabulary. As mentioned earlier in this section, Oxford and Nysikos (1989) have noted that a student’s motivation

for learning a language is the best predictor of whether or not a student will use LLSs in general. Recall the second part of their statement of provided above: “The more motivated students used learning strategies of all these kinds more often than did the less motivated students” (1989:294). By way of application, if a learner of BH vocabulary is highly motivated, the learner will be likely to use VLSs. However, if a learner of BH vocabulary is not highly motivated, the learner will likely not use VLSs. In general then, VLSs will have efficacy for motivated students, but not for unmotivated students. Thus, for a model for learning BH vocabulary that makes use of VLSs to be successful, attempts must be made at bolstering overall student motivation. Encouraging students to engage in self-motivation strategies may be particularly helpful because these can help to maintain motivation as motivation fluctuates.

Learner motivation may also affect the usefulness of a particular VLS. For instance, a learner may be highly motivated to learn BH as a whole; however, the learner may be intimidated by a particular VLS (e.g., an introverted person being intimidated by a VLS involving working in groups) or perceive a particular VLS to be ineffective or difficult. In this case, the student will not be highly motivated to use the particular VLS, thus rendering it ineffective. Strategies that do not evoke motivation should be eliminated, while strategies for which motivation is high should be maintained.

Aside from motivation, a second difference among students affecting the efficacy of VLSs of all types is gender. This matter can be stated plainly by noting that females are much more likely to use LLSs. Ehrman and Oxford (1989) tested the hypothesis that “females report greater strategy use than males.” The result was that in empirical testing “very strong support appeared for the hypothesis” (1989:6–7). In a later study, Ehrman and Oxford (1995:68) also demonstrated that females are more likely than males to use metacognitive strategies, affective strategies, and social strategies. In view of these findings, it should be clear that a model for learning BH vocabulary might need to make provision for the fact that males are less likely to find some strategies useful or comfortable. In other words, since females would be likely to find some strategies useful anyway, it may be necessary to incorporate some form of planning, evaluating, and organizing in the BH model in order for male students to experience the benefits of those strategies. For example, the BH model of vocabulary learning should perhaps plan out some kind of schedule for male students who are not likely to plan. Such strategies would have to be included in such a way that they would not lower the motivation of male students.

A third difference among students that may affect the efficacy of VLSs is what some scholars refer to as “learning style.” In addition to noting difficulty in defining LLSs, Dornyei and Skehan (2003:601–607) point out that scholars have had a great deal of difficulty defining learning styles. They claim that there are at least four different approaches to defining what learning styles are. According to Dornyei and Skehan, scholars have viewed learning styles in terms of students being field independent or field dependent, having a complex interaction of various style dimensions such as visual, auditory, and tactile, focusing on different ways of processing and transforming information, and/or preferring a certain class of LLSs. Sarasin (1999:18) cites five different approaches to learning styles in a chart that is reproduced below:

Table 2. Characteristics of Learners

Theorist			
Celli Sarasin	Auditory	Visual	Tactile
Gregore/Butler	Abstract/Sequential	Random/Concrete	Concrete
Sims & Sims	Cognitive	Perceptual	Behavioral/Affective
McCarthy	Analytic	Imaginative	Dynamic
Harb, Durrant & Terry	Abstract/Reflective	Concrete	Active/Concrete

If one of the prevalent systems of learning styles held sway, looking at learning styles and their effect on the use of LLSs would be much more beneficial; however, Dornyei and Skehan (2003:607) comment as follows in this regard:

As concluded by others (Skehan 1989; Griffiths and Sheen 1992), it appears from a review of findings on style that such concepts may not deserve high research priority, but they have not been eliminated as potentially relevant second language linked measures. What is now needed is more evidence of educationally linked applications of such concepts. If such evidence is forthcoming, style concepts may become more prevalent in SLA once again.

In light of this mildly negative assessment of current research on learning styles, I would like to make one observation that may be useful to the present study. One of the insights made by linguists who see learning styles as important is simply to note that all students learn differently. This observation, though very simple, can be quite helpful because it could mean that it may not be best to speak of the best *strategy* for learning BH vocabulary, but rather of the best *strategies* for learning BH vocabulary. Cohen (2003:282) makes the following comments with regard to LLSs and learning styles:

Consequently, no single strategy will be appropriate for all learners or for all tasks, and invariably individual learners will apply the very same strategies in different ways ... Furthermore, language learning and language use strategies are not inherently “good” or “effective,” but rather need to be evaluated in terms of their effectiveness for individual learners possessing differing style preferences, in the completion of given language tasks with their specific configuration of task characteristics.

In developing a model for learning BH vocabulary, it will likely be best to offer learners a variety of VLSs to choose from in the learning of any vocabulary set. Thus, though not much specific can be learned through this examination of learning styles, it is possible to use it as a guide for general application.

A fourth difference among students that may influence the effectiveness of VLSs is the student’s level of language study. Nysikos and Oxford (1989:295) found that more advanced learners were in general more likely to use LLSs than beginning learners. Schmitt (1997:201), however, states that beginners may not differ as much in the *number* of strategies that they use as they do in the *types* of strategies that they use. According to Schmitt, advanced students are more likely to find more difficult and involved strategies useful, whereas beginning students seem to prefer simpler strategies (1997:201). Since the students targeted in the present study will be beginning students in BH, these students will most likely prefer simpler strategies without many distracting features. This point will

become more important in the attempt to determine the most useful strategies for students learning BH vocabulary, as difficult or involved strategies can be eliminated.

To summarize this section on individual differences, the primary differences among students that may play a role in the efficacy of VLSs are motivation, gender, learning style, and level of study. By way of application, I have argued that in a model for learning BH vocabulary based on the use of VLSs, motivation must be emphasized throughout the course of the entire vocabulary learning process in order for VLSs to be effective at all. Additionally, strategies that do not engender motivation should be eliminated. In light of gender differences, it may be necessary to take initiative in the BH model for metacognitive, affective, and social strategies by requiring aspects of these strategies for students. Because students may have different learning styles, options should be offered with regard to VLSs, so that students will be able to choose the VLSs that they find most effective. Finally, beginners are likely to prefer simpler strategies over more complex ones, allowing more complex strategies to be eliminated from this study. In the following section, I will discuss factors affecting the efficacy of VLSs that have to do with the specific nature of the language being learned.

2.1.3.2 Target Language Factors for Biblical Hebrew

While student differences play an important role in determining whether or not VLSs will be effective, there are also factors specific to each language and to each language learning process that may contribute to the effectiveness or ineffectiveness of particular VLSs. Factors specific to each language would involve the characteristics of the specific language being learned, while factors specific to each language learning process would involve differences between the L1 and the L2. These two types of differences and their effects upon particular VLSs for the learning of BH vocabulary will now be discussed.

Two characteristics of BH that would likely influence the effectiveness of some VLSs concern BH's phonetics and BH's nature as a text-based language. BH's phonetics would probably limit the efficacy of purely auditory VLSs. BH has several letters in the alphabet that are pronounced very similarly. Examples of these are the similarities between **ס** and **ע**, **ח** and **ת**, **ד** and **שׁ**, and **י** and **כ**. These similarities would affect strategies consisting of only auditory means, such as listening to a tape of vocabulary words. For instance, if a student primarily listened to a tape, words like **דס** ("if, then") and **דע** ("with") and **התס** ("you") and **התע** ("now") would be confusing. Other strategies may also be affected; the other potential problems will be examined below in the section on choosing the best strategies for BH (see section 2.2 below). This example simply serves to illustrate that BH's phonetics could affect the usefulness of some VLSs.

A second characteristic of BH that could influence the efficacy of some VLSs is the fact that BH is a text-based language, which means simply that it is no longer spoken. This characteristic of BH calls into question the efficacy of a number of VLSs, particularly strategies that involve communicative aspects (once again, see section 1.2.2 above). Van der Merwe (2002; see also Walker-Jones 2003:4-5)

agrees that in light of the fact that BH is no longer spoken, communicative competence may not be a desirable goal for BH instruction as a whole. For instance, one VLS noted by Schmitt (1997:207) is to read an L2 newspaper. Since there are no more native speakers of BH and thus no L2 newspapers in the language, this strategy would not be useful for learning BH vocabulary. Other strategies that will likely not be useful on these grounds will be discussed in the section on choosing the best strategies for learning BH vocabulary; however, at this point it should suffice to say that BH's nature as a text-based language may decrease the efficacy of some VLSs, particularly VLSs that involve communicative use of language. Therefore, communicative strategies will be eliminated in this study for learning BH vocabulary. These two characteristics of BH, its phonetics and its nature as a text-based language, may not be the only two characteristics affecting the efficacy of VLSs; however, these two differences appear to be the most important. I will now turn to differences between BH as an L2 and English as an L1 that may affect the usefulness of particular VLSs.

A first difference between English as an L1 and BH as an L2 concerns the language families to which they belong. English and BH are not closely related with regard to family relationships between languages. English is in the Indo-European family of languages, whereas BH is in the Afro-Asiatic family of languages (O'Grady, Dobrovolsky, & Katamba 1997:391,401). This "genealogical distance" between language families means that VLSs that involve using cognates will be of little, if any, use for English-speaking students learning BH vocabulary. Schmitt defines cognates as "words in different languages which have descended from a common parent such as *Mutter* in German and *mother* in English" (1997:209). Such cognates are not likely to exist in genealogically distant languages like English and BH.

A second difference between English and BH that could affect the usefulness of particular VLSs is the difference between English and BH orthography. Ryan (1997) presents research concerning language learning in general that shows that students learning an L2 with a different orthographical system than their L1 have particular difficulties in learning the L2. Ryan's study is of particular interest because it deals with Arabic-speaking students learning English as an L2. Arabic, like BH, is a semitic language, so as a generalization it may be true that students with a semitic language background have particular difficulties learning English due to orthographical differences. The reverse may also then be true: students with an English-language background may have particular difficulties in learning a semitic language due to differences in orthographical systems. Because orthographical systems present particular difficulty to students, it would be logical to assume that different orthographical systems may have an effect on the usefulness of particular VLSs. For instance, in light of the differences between English and BH orthography, strategies that emphasize implicit learning (e.g., reading) will be of the utmost usefulness for learning BH. This claim is made in light of Ellis's (1994) finding that orthography is learned through implicit processes. Ellis concludes a discussion of how orthographical knowledge is gained by stating: "Quite simply, the more reading practice, the more these systems will become tuned to the L2. But the rate of acquisition will be affected by transfer from L1" (1994:239). In other words, orthographical knowledge is gained through implicit

processes regardless of what the L1 and L2 are, only the differences between the L1 and L2 will cause this process to be slower or faster. Other possible effects on the usefulness of VLSs will be discussed below; however, the importance of differences in orthography should be noted for now. The genealogical distance between English and BH and the differences in orthography between the two languages may not be the only factors influencing the efficacy of particular VLSs, yet these factors do appear to be the most important.

2.2 The Most Productive Strategies For Learning Biblical Hebrew Vocabulary

With the aforementioned factors influencing the efficacy of VLSs in mind, I will now examine Stoffer's (1995) taxonomy in an attempt to identify the strategies that will prove most beneficial for students learning BH vocabulary and to remove those strategies that would not prove beneficial for students learning BH vocabulary. Strategies will be kept or eliminated on the basis of the factors discussed above and on the basis of empirical studies concerning their efficacy.

2.2.1 Strategies Involving Authentic Language Use

A study performed by Gu and Johnson (1996) showed that students who were active readers were most likely to have the largest vocabulary sizes as well as the best overall language proficiency. Therefore, authentic language use strategies are perhaps the most important strategies. Yet even in spite of the utility of such strategies, it appears that many of the strategies within this set would not prove useful for the learning of BH vocabulary, primarily because of the nature of BH as the target language. In fact, it appears that only one strategy from this set can be maintained as useful for learning BH vocabulary. Strategies that can be eliminated due to the nature of BH are: reading L2 newspapers and magazines, watching L2 movies, listening to L2 radio programs, making up conversations with L2 speakers, practicing conversation with L2 speakers, writing letters using new words, linking words in a list by creating a story, making collages with related words, and writing poetry using new words. Newspapers, magazines, movies, radio programs, and materials for making collages do not exist for BH. Discoursing with a native speaker, using words in letters, creating stories, and writing poetry do not appear useful because they assume communicative competence, which may not be a desirable or even attainable goal for BH instruction (Van der Merwe 2002; Walker-Jones 2003:4-5; see also section 1.2.2 above). Thus, the only strategy from this category that will be maintained for learning BH vocabulary is to read L2 literature and poetry. L2 literature and poetry for BH is abundant in the Hebrew Bible, although reading poetry should come at a more advanced level, and perhaps only with tools, such as hypertext technology (Van der Merwe 2002).

Though reading BH literature and poetry is the only strategy that will be maintained in this category, the importance of this strategy for learning BH vocabulary should not be underestimated. There are many scholars who extol both intensive reading (small quantities in detail) and extensive reading (large quantities for major points) for learning vocabulary, e.g., Coady (1997), Nagy (1997), and Day

and Bamford (1998). In particular, extensive reading of literature as a VLS can help a student to learn many aspects of vocabulary knowledge that are more amenable to implicit learning than they are to explicit learning. Ellis (1994, 1997) appears to have done the most research about which aspects of vocabulary knowledge should be gained through implicit learning and which aspects should be gained through explicit learning. Ellis (1994:225–37) comes to his conclusions about how different aspects of vocabulary knowledge are gained through examining research within the field of psychology on priming studies of monolingual implicit and explicit memory systems, priming studies of bilingual implicit and explicit memory systems, and studies of amnesiacs. Ellis (1997:123) proposes that word form, pronunciation, spelling, collocation, and grammatical class information should be learned through implicit processes such as reading. This system leaves only an item’s “semantic and conceptual properties, and the mapping of word form labels onto meaning representations” to be learned through explicit processes (1997:123). In the system used in the present study, this means that only an item’s meaning and associations are learned through explicit processes. It will be assumed that one item’s relative frequency when compared with other items will be learned through reading as well, since a student will see the word over and over again, or rarely, recognizing that it is frequent or infrequent.⁴ Using the aspects of knowledge approach assumed in this study, the following table displays those aspects of knowledge that should be gained through implicit and explicit processes according to Ellis.

Table 3. Aspects of Word Knowledge/Type of Process Used to Learn

Aspect of Word Knowledge	Type of Process Used to Learn	
	Implicit	Explicit
Meaning(s)		X
Written Form	X	
Spoken Form	X	
Grammatical Behavior	X	
Collocations	X	
Associations		X
Frequency	X	

In short, though reading in BH is the only available VLS with regards to authentic language use, the importance of this strategy is evident. In order for a student to learn many aspects of vocabulary knowledge, reading will be the best possible strategy.

⁴ Schmitt (2001:6) sees learning frequency as closely akin to learning register, which would likely require a great deal of reading. Of course, the frequency of an item can be included for the learner, yet the frequency itself would not be something that would be *learned*. It would be included primarily for motivational purposes, i.e., to signal to the learner that the word is important.

2.2.2 Strategies Involving Creative Activities

The next set of strategies requiring examination are those involving creative activities. Unlike the strategies involving authentic language use, many of these strategies cannot be eliminated off-hand without further explanation. However, some of the strategies that fall into this category also appear in the category of strategies involving authentic language use. These strategies *can* be eliminated off-hand from the category involving creative activities. The overlapping strategies are writing poetry using new words, linking words by creating a story, writing letters using new words, and making collages with related words. Once again, communicative competence may not be a desirable goal for learning BH (Van der Merwe 2002; Walker-Jones 2003:4-5; section 1.2.2), and few, if any, resources would be available for an activity such as creating a collage.

Research on the rest of the strategies in this category will be considered below, with each strategy examined individually. The first strategy in this category is to “use a computer program to practice words.”⁵ Indeed, it does appear that this strategy would be beneficial for learning BH vocabulary. Much research has been done in recent years on computer programs as a tool for learning L2 vocabulary. Researchers and teachers are beginning to see that computers offer possibilities for learning L2 vocabulary that either were not available before or would have been too cumbersome. I will look at several studies below to give an idea of the benefits of using computers for learning vocabulary, as well as the potential problems associated with this strategy.

First, several studies have examined how the use of computer programs can aid in the acquisition of vocabulary by allowing students to read using hypertext media. Chun and Plass (1996) found that students reading a text using a computer program are able to learn vocabulary well, if words that are looked up are glossed with both text and a picture rather than with text alone. Learning vocabulary in this way leads to both good short-term and long-term retention. Lyman-Hager cites several studies that show that “glosses may enhance the readers’ comprehension, if the text contains a high incidence of unknown words” (2000:434). Leffa (1992) studied the effect of the use of hypertext technology using an electronic glossary on reading comprehension. He states, “The findings indicate that the electronic glossary was more efficient than the traditional dictionary, allowing the subjects to understand 38% more of the passage, using 50% less time” (1992:63). The advantage that may emerge from students being able to use computers for reading is that (a) they will be able to begin reading earlier, and (b) they will begin to gain the aspects of vocabulary knowledge that are better acquired through implicit learning.

Second, several studies have shown that the use of computers has the advantage of contextualizing vocabulary learning. Many scholars have pointed out problems with learning words using methods such as word lists and flash cards, which exist outside of authentic contexts (For a summary of the research, see Nagy 1997). Computer technology now offers opportunities for having a sort of hybrid

⁵ At the time much of this study was performed, I did not own a cellular device that would have made it possible for me to include them in the research, especially the development phase in Chapter 4. However, the use of cellular devices should certainly be kept in mind in future research.

between list learning and contextualized learning. Three studies show how computers can aid in providing contextualized learning: Kang (1995), Cobb (1999), and Groot (2000). Cobb (1999) and Groot (2000) appear to be more focused on intermediate to advanced learners; however, Kang's (1995) study suggests that this is a promising approach even for beginners. Kang tested the effects of using a computer program to introduce words in genuine contexts. He found that presenting words along with both written and visual contexts was better for definition recall, listening comprehension, and knowledge transfer than paired-associate learning with paper and pencil, with a computer having words but no picture, or with a computer having only a picture (1995:43).

Third, computers seem to offer a whole new opportunity for the incorporation of VLSs. Both Röllinghoff (1993) and Segler, Pain, and Sorace (2002) suggest that computers could allow a wide variety of VLSs to be used. Several studies have already shown that strategies like quizzing (Röllinghoff 1993:34–35), flashcards (Röllinghoff 1993:29), and repeating out loud (Svenconis & Kerst 1994:37), can be incorporated into computer programs. These programs also make it possible to use explicit strategies for learning various aspects of vocabulary knowledge, such as associations (Svenconis & Kerst 1994; Chanier & Selva 1998) and collocations (Nesselhauf & Tschichold 2002).

The studies cited above by no means exhaust the pertinent research or the possibilities for using a computer program to learn vocabulary. These studies should illustrate, however, that the strategy of using a computer to learn vocabulary should certainly not be eliminated; in fact, it will be investigated more fully later in Chapter 4 of this study. One important point that should be mentioned here is that use of a computer will not be the only strategy developed in this study. It may be that some students have no access to a computer at all, or no access at a particular time when the student needs to study vocabulary. Therefore, though the computer will provide a strong avenue for vocabulary learning, research into using computers for learning vocabulary should not be done at the expense of examining other strategies.

The next strategy involving a creative activity is to record words on tape and listen. From the literature, this strategy does not appear to be very beneficial. First, the problem of letters with similar phonetics (see section 2.1.3.2 above) would cause some words to be confused. Second, there are other related problems with this strategy, having to do with the effects of learning words in a set order.⁶ Nation (2001:307) states:

Learning words in a set order can result in serial learning of words where one word helps recall of the next word in the list. If lists are being learned to be recalled and used as lists, then serial learning is a useful thing. For vocabulary learning, however, serial learning is not useful because each word needs to be recalled independently of others without having to go through a series of words.

⁶ The effects of serial learning also cast doubt upon the usefulness of learning words using word lists or vocabulary notebooks, which are two approaches not dealt with by Stoffer (1995). Nation (2001:303–310) notes that in light of the effects of serial learning, word cards (flashcards) are much to be preferred to these types of approaches because the order of word cards can be changed quite easily, eliminating the effects of learning words in a set order. He also notes that word cards can be used to contain much of the same information that a student would put in a vocabulary notebook.

Of course, the student could use a recording device and record the words in one order and then later in different orders. However, it would probably be easier for the learner simply to repeat the word aloud when encountered rather than trying frequently to change the order of a recording.

A second related pair of problems having to do with learning words in a set order are the primacy and recency effects. Primacy and recency effects refer to the finding that when a person learns words in a set order, the first words in the list and the last words in the list are recalled better than the words in the middle of the list (Nation 2001:307). If a student were to record words in a set order and then listen to them, the student would better remember the first and last words recorded. If the lists were long, then the number of words in the middle that would not be remembered well would be many. In light of the negative aspects of serial learning, this strategy is accordingly eliminated for the purposes of this study.

The strategy of organizing words on a word processor also does not appear to be very beneficial for learning BH vocabulary. The reason for this has to do with the fact that the learners targeted in the present study are beginning learners who would likely prefer simpler, easier strategies. It has been my experience as a student that working with BH in a word-processing program can be quite trying at first. My experience as a teaching assistant has confirmed that other students likewise have trouble working with BH in a word-processing program at first. Considering the beginner's desire for easier strategies, using a word processor to organize BH words does not seem very appealing.⁷

The next strategy in the category involving creative activities is to watch videos made for L2 learners. Though this strategy is not the same as "watch L2 movies," it suffers from a similar lack of availability. To my knowledge, there is no video series developed specifically for learners of BH.⁸ Thus, whatever benefits a student might gain from such a strategy do not appear available for BH, and the development and production of a quality video would be outside of the scope of this study.

Another strategy involving a creative activity would be for the learner to physically act out new lexical items. Saltz and Donnenwerth-Nolan (1981:330–31) shows that the use of physical action aids language recall of whole sentences. Schmitt (1997:215) also notes that Asher used physical action as a basis for a whole approach called Total Physical Response (TPR). There are no studies suggesting that the use of physical response would not be helpful. Therefore, this strategy cannot be eliminated at this point. Of course, not all words will be amenable to this approach. It is difficult to imagine a physical action that would help the student to remember the word *and*. Also, some students may not be highly motivated to use this approach, especially if they are introverted. In Schmitt's (1997:208) study of Japanese learners of English, only 13% of students reported actually using such a strategy, and only 49% reported that they thought such a strategy would be useful. This suggests that

⁷ Subsequent study has demonstrated that there are potential ways of overcoming these difficulties. Indeed, the category exercises developed in Chapter 4 of this study in some ways make use of this strategy. Learners organize words into categories by clicking on them.

⁸ The set of materials developed by Kregel (Fuller & Choi 2006) does have a video component; however, I do not think this is what is in view here. Rather what appears to be in view is perhaps watching a motion picture in the L2.

motivation is a potential problem with using physical actions. Despite these problems, this strategy should likely be presented as at least one option for students learning BH vocabulary, in light of its possible benefits for aiding recall and also its ease of use.

A final strategy in the taxonomy involving a creative activity would be to use color-coded flashcards for grammatical information such as gender. No studies have been done on the color-coding of flashcards; however, quite a number of studies have been done on the use of flashcards in general. Nation (2001) is one of the major proponents of the use of flashcards. Some critics deny benefits of learning from word cards because they are not good for memorization and because they are decontextualized. Nation (2001:301) comments as follows on these two criticisms:

So far, we have looked at two criticisms of learning from word cards. The first, that word cards are not good for remembering is simply wrong; the research shows otherwise. The second criticism, that word cards do not help with the use of words, is largely correct, but it takes an incorrect view that there are no other things to learn about words.

Nation concludes that “it is necessary to see learning from context and learning from word cards as complementary ways of learning which overlap and reinforce each other and which give rise to some different kinds of knowledge” (2001:300).

Two other lines of research that deserve mention with reference to flashcards come from Schmitt (1997). First, in Schmitt’s survey of Japanese students learning English, 65% of students stated that they felt the use of flashcards would be helpful (1997:208). This percentage is quite high and shows that students might be motivated to use flashcards as a strategy.⁹ Second, Schmitt states that flashcards have the advantage that they can be carried anywhere, giving students the freedom to study at any time or place they find an opportunity (1997:215).

With regard to the use of color-coding, there appears to be no reason to assume that it would not be helpful. Nation (2001:305) notes that information such as grammatical knowledge or collocations can be put on a word card, though he believes that it is best to keep the cards simple. Color-coding the cards is a way to keep the word cards simple by adding grammatical information without adding written material to the back of the word card resulting in the card being cluttered. Stoffer (1995:123) suggests color-coding for gender, but there seems to be no reason why other types of grammatical information could not be coded. For instance, verbs, nouns, etc. could receive different color-codes.¹⁰ In this study, using color-coded flashcards will be maintained as a possible strategy for learning BH vocabulary.

To summarize, this section has dealt with strategies involving creative activities. Strategies that will be maintained from this category are using a computer program to practice words, physically acting out new words, and using color-coded flashcards. Strategies that will be eliminated from this category are recording words on tape and listening, organizing new words on a word processor,

⁹ This motivation might even be higher if students were taught how to make the best use of word cards by following the suggestions of Nation (2001:303–10).

¹⁰ Landes (2001) makes the suggestion of color-coding frequency information.

watching videos made for L2 learners, writing poetry using new words, linking words in lists by creating a story, writing letters using new words, and making collages with related words. I will now move on to strategies involving self-motivation.

2.2.3 Strategies Involving Self-Motivation

Three strategies in this category seem communicative in their approach to learning a language: encouraging oneself when afraid of mistakes, paying attention to speech, and being aware of incorrect use. Since these strategies seem more communicatively oriented, and since communication in BH may not be a desirable goal (Van der Merwe 2002; Walker-Jones 2003:4-5), these strategies can be eliminated as useful for learning BH vocabulary.

A first strategy in this category that does appear useful for learning BH vocabulary is to “enjoy” learning new vocabulary. Stoffer (1995:33) cites a research study by Reiss (1985) on the “good language learner,” where Reiss found that the good language learner enjoys learning a foreign language. In survey research, Pekrun, Goetz, Titz, and Perry (2002) found that enjoyment of learning increased academic motivation. They state, “In consistent ways, enjoyment, hope, and pride correlated positively with students’ interest, intrinsic motivation, ... extrinsic motivation, ... total motivation to learn, and self-reported academic effort” (2002:99). Considering the importance of motivation, enjoying learning is a very important strategy because of its value for increasing motivation. Dornyei (2001:112–13) observes that enjoying language learning involves avoiding satiation. Two ways suggested by Dornyei to avoid satiety are to (1) add a twist to a task, and (2) use fantasy to liven up a task. With regard to this strategy, it appears necessary to encourage students to adapt strategies used to learn vocabulary. It also appears necessary to encourage students to vary which particular strategies they use. This strategy will be maintained for its benefit of possibly increasing student motivation.

A second and final remaining strategy involving self-motivation involves the learner experiencing a feeling of being successful during the learning of vocabulary. Bandura, Barbaranelli, Caprara, and Pastorelli found that “children’s beliefs in their efficacy to regulate their own learning and academic attainments, in turn, contributed to scholastic achievement ...” (1996:1206). There seems to be no reason why this finding might not hold for adults as well. If students believe that they are being successful and that they will be successful, then they will have a better chance of success. Dornyei (2001:126) recognizes the importance of students feeling successful when learning a language and states that ways of helping students to feel successful might involve monitoring learner accomplishments, taking stock of progress, and making progress tangible. This strategy may be the responsibility of a vocabulary or grammar, rather than primarily the responsibility of the student. Two preliminary ideas for promoting a feeling of success would be to keep students updated on the progress that they have made and to provide students with phrases or verses that they might be able to read from the Hebrew Bible with little to no help. For instance, after learners have mastered the fifty most frequent words in the Hebrew Bible, they could be informed that they have attained a 50% text

coverage for the Hebrew Bible (Van Pelt & Pratico 2003:ix).¹¹ Such feedback might give the learner an early feeling of success when vocabulary learning may feel difficult.

2.2.4 Strategies Used to Create Mental Linkages

A first strategy for creating a mental linkage is to link a new word to an L1 word with similar spelling. This strategy is akin to Schmitt’s strategy of using cognates (1997:209). Nation (2001:280) states that cognates can be useful for learners, but that sometimes the cognates need to be explicitly pointed out. Even in light of Nation’s positive assessment, this strategy would only be minimally useful for learning BH vocabulary considering the genealogical distance between English and BH. Words with similar spellings do not exist in large quantities for languages as distant as English and Hebrew. The only exception might be in the case of proper names of people and places. If these words were to be transliterated into English, the spellings might be similar thus helping students to learn these words. Therefore, this strategy is maintained with the recognition of its very limited usefulness.

A second related strategy would be to link words to similar sounding L1 words. This strategy is perhaps the most researched strategy within applied linguistics vocabulary research. The most general term for this strategy is the “keyword method.” This method does appear to have some usefulness for a model of learning BH vocabulary, though its usefulness may be somewhat limited. Since the keyword method is quite prominent in the applied linguistics material, I will discuss the approach in some detail. I will describe the approach, discuss studies that deal with the approach’s strengths and weaknesses, and analyze possible uses of this approach for learning BH vocabulary.

Nation (2001:311) describes the keyword method as a four step approach, but terms two of the steps that he identifies as “unknown word” and “meaning of unknown word.” It does not seem necessary to count these two items as “steps.” Thus, there seem to be only two significant steps in the actual process. Nation’s chart outlining the process along with illustrations is as follows (2001:311–12):

Table 4. Nation’s Illustration of the Keyword Technique

1	2	3	4
Unknown word	First language keyword	A mental image combining the meaning of the unknown word and the meaning of the keyword	Meaning of the unknown word
Fund	fun (Thai) meaning ‘teeth’	A fund of money being eaten by a set of teeth	A supply of money for a special purpose
Candid	can (English) meaning container	A can with a label which honestly shows its contents	honest and truthful
Core	hor (Serbo-Croat) meaning ‘choir’	A choir standing on the core of an apple	The most important or central part

¹¹ This suggestion had to be followed somewhat differently in Chapter 4, since a strict frequency approach was abandoned in this study.

With this description of the keyword method in mind, I will now discuss the strengths and weaknesses of this approach. The strength of the keyword method is that it has been shown through empirical testing to work better than any other approach for pairing word forms and meanings. Nation (2001:313) states:

The experiments evaluating the keyword technique have compared it with:

- rote learning
- use of pictures (Levin, McCormick, Berry and Pressley 1982)
- thinking of images or examples of the meaning - instantiation - (Pressley, Levin, Kuiper, Bryant and Michener 1982)
- context - the unknown word is placed in sentence contexts and the meaning of the word is provided - (Moore and Surber 1992; Brown and Perry 1991)
- added synonyms - the meaning is accompanied by other unknown synonyms - (Pressley, Levin, Kuiper, Bryant and Michener 1982)
- guessing from context (McDaniel and Pressley 1984)

The studies cited above generally show the keyword technique results in faster and more secure learning than other approaches.

One initial problem that might arise with regard to the keyword method is that some do not see it as being preferred by beginners on account of its complexity. However, Stoffer (1995:51) and Sökmen (1997:247) both note that keywords could be provided by an instructor. In the case of the present study, possible keywords could be suggested within the vocabulary guide. Thus, beginners would not have to perform any of the steps in the process that might appear more complex.

In light of the positive findings discussed above and the fact that keywords can be successfully provided for beginners, one might wonder why an entire approach to learning vocabulary based upon the keyword method could not be developed. Despite the strong empirical evidence for the keyword method, there are two reasons for not developing an entire approach to learning vocabulary based upon this method. A first reason has to do with another line of empirical research dealing with the keyword technique. Stoffer cites two studies by Wang, et al. (1989, 1992, as cited in Stoffer 1995:55) that suggest that the keyword technique may lead to a very fast initial learning, but that the high rate of forgetting resulting from this method causes it to be equivalent to other methods, such as rote memorization. Nation (2001:314) deals with this issue by stating that the keyword technique should be used for its ability to allow for fast initial learning. The fast initial learning should be very quickly supplemented with the students seeing the vocabulary words occurring in genuine contexts.

A second reason for not developing a whole approach to vocabulary learning based on the keyword method is that this method may work well with some words and not others. Hulstijn notes that the keyword method can only work “with words referring to objects that can be perceived visually” (1997:210). The reason why the approach should only be used with objects that can be visually perceived is that the third step involves creating a mental picture of a link between words. This does not necessarily mean that both the English keyword and the BH meaning must be visually perceivable, as in the example of *לְכַּף* (“for, because”) below. Since the English keyword provides a visual (i.e., *key*), a link can still be made for the abstract word *for, because*. Nation citing Hall (1988,

as cited in Nation 2001:314), also recognizes that “the keyword technique works well on some words (usually where keywords are easy to find) and not so well on others.” In other words, there may be some BH words that will not sound like any concrete English word. Therefore, in light of the fact that the keyword method may only work well with some words and not others, a whole approach should not be based on this method.

The table below serves to illustrate how the keyword method might be useful for the learning of BH vocabulary:

Table 5. Illustration of the Keyword Technique Used for BH

1	2	3	4
בֵּן	<i>Benjamin</i>	A father with a son whose name is Benjamin	Son
כִּי	<i>key</i>	A key with the word “for” written on it	For, because
כָּל, כּוֹל	<i>coal</i>	A bag of coal with the word “all” written on it	All, every

These are only a few illustrations from the most common words among BH vocabulary. These illustrations are intended to show that at this point the keyword method should not be eliminated as a possibly helpful approach for learning BH vocabulary.

The next strategy involving creating mental linkages is to create links with already known words. This strategy appears to be useful after students have connected the form of a word with its meaning. Since one of the aspects of vocabulary knowledge is knowing one item’s associations with other items, creating linkages between already known items would be useful. The primary way of creating these linkages in the applied linguistics literature is through a procedure called “semantic mapping.” Sökmen (1997:250) notes that semantic mapping can be helpful, but that it should not be used extensively to introduce new words. Nation (2001:303) cites several studies showing that similar words should not be learned together because interference may result (See section 1.1.1 for references to these and other studies, as well as what is meant by interference). Therefore, it appears that linking to known items might work better after an item’s form has already been mapped to its meaning(s). This strategy then appears useful, but it should be used later in the learning process.

The next strategy for creating mental linkages is to learn related topics at the same time. This strategy does not appear to be useful in light of the research of Nation cited above. Nation states: “Words that are formally similar to each other, or that belong to the same lexical set, or which are near synonyms, opposites, or free associates should not be learned together” (2001:303). Nation also points out that learning words in lexical sets can go against the principle of learning the most frequent words in a language first (2001:387).

The final strategy in the category of creating mental linkages is to relate new words to oneself. Boyle (1993) reports on implementing strategies into an introductory course in Russian. She found that personalization of vocabulary was a beneficial strategy, stating that “personalizing new words right

from the introduction helps students to ease into the terra incognita of the Russian language” (1993:228). Schmitt (1997:207) reports that 62% of students believe that such a strategy would be useful. Thus, students might be fairly open to this strategy. In light of the positive findings regarding the use of this strategy and the likelihood of students using it, the strategy is maintained as potentially useful in this study.

To summarize this section, the strategy that was eliminated was learning related topics at the same time. The strategies that were maintained are linking words to L1 words of similar spelling (though only for some proper nouns), linking words to similar sounding L1 words, creating links with already known words (after an initial pairing of form and meaning), and relating new words to oneself. I will now move on to examining the memory strategies.

2.2.5 Memory Strategies

The first memory strategy is the use of flashcards. The use of flashcards was dealt with in section 2.2.2 in the discussion of using color-coded flashcards. Color-coding flashcards might be particularly useful for adding grammatical knowledge about a word, rather than having only form and meaning paired. In light of the possible use of color-coded flashcards, I will eliminate the use of plain flashcards. There seems to be no reason to maintain the use of plain flashcards if a better use of flashcards is available with little or no extra added effort.

Another memory strategy would be to repeat words aloud several times, a strategy often referred to as “verbal repetition.” This strategy could be useful in light of the fact that 84% of students in Schmitt’s (1997:208) study said that they thought that verbal repetition would be helpful. This strategy then is one that students would be very likely to use. After performing an empirical study on memory and vocabulary acquisition, Ellis and Sinclair stated that “... subjects encouraged to rehearse foreign language (FL) utterances are better than both silent controls and subjects who are prevented from rehearsal by articulatory suppression at ... acquisition of FL forms of words and phrases ...” (1996:234). Though this study dealt with the rehearsal of utterances, the findings may suggest that repetition of single words might work as well. The strategy is also very simple, requiring little extra time. Therefore, it should be maintained on account of perception of usefulness, potential benefits for learning forms, and ease of use.

A third possible memory strategy is to write words over and over, a strategy often referred to as “written repetition.” Written repetition is sometimes looked down upon as a VLS; however, Schmitt (1997:201) states that rote repetition can be useful if students are accustomed to it. Though Schmitt does give a mildly positive assessment of written repetition, there is one line of research that points toward eliminating this strategy.¹² Gu and Johnson (1996:644) found that the strategy of visual repetition was a negative predictor of vocabulary size and overall language proficiency. In written

¹² This does not necessarily mean that written repetition cannot be helpful for learning the orthography of the language. I have only vocabulary learning in mind here.

repetition, the repetition would seem to be primarily visual, though the strategies of written repetition and visual repetition might not be identical. On the other hand, Gu and Johnson also found that oral repetition did correlate well with general language proficiency (1996:668). In light of these findings, it appears that if a student is going to use repetition, then the student should be encouraged to use verbal repetition instead of written repetition. Thus, written repetition will be eliminated on account of possible negative effects and in order to encourage the use of verbal repetition if repetition is going to be used.

The next memory strategy in the taxonomy is to review words frequently. The findings of applied linguistics and psychological research suggest that this strategy will be very useful (Nation 2001). The best method for review is referred to as “spaced repetition.” Nation (2001:77) describes the reasoning among scholars for spaced repetition as follows:

Firstly, after a piece of learning, the forgetting is initially very fast and then slows down. Secondly, on the second repetition a piece of learning is older than it was on the first repetition and so the forgetting on the second repetition will be slower than it was. On the third repetition it will be even slower.

Therefore, words should be reviewed more frequently when they are first learned, but over time the review sessions should be spaced farther and farther apart. Ideally, once the student begins to do more and more reading, many words will not need to be reviewed since they are retrieved often while the student is reading. Nation (2001:79) claims that the best method of repetition is for the student to retrieve the meanings of the words being reviewed. This view corresponds with the idea pointed out earlier that passive recall is the best predictor of overall success in learning a language.

A fifth memory strategy is to concentrate hard to avoid distractions. Hygge (2003) presents research showing that some types of noise distractions affect recognition and recall. If these findings are generalizable to other types of distractions, and if recognition and recall are affected by different types of distractions, then different types of distractions would cause a great deal of trouble for vocabulary learning. If the student is distracted and unable to recall and recognize words, ultimately frustration will set in. Dornyei (2001:111–12) provides several examples of what students might be able to do in order to maintain concentration: give oneself regular reminders to concentrate, imagine possible consequences of a lack of concentration, give oneself regular reminders of deadlines, ignore attractive alternatives or irrelevant aspects, identify recurring distractions and develop defensive routines, cut short purposeless or counterproductive procrastination, use starter rituals to get into focus, and focus on the first steps to take. This strategy and these suggestions for using this strategy appear useful since distraction could negatively effect learning and lead to frustration.

A sixth memory strategy would be for students to quiz themselves, or for students to quiz one another. This strategy does not appear much in the research; however, it seems to have the same effect and appeal as the strategy of reviewing frequently. Both strategies would give the student the opportunity to review items and help the student to see what items are known and what items are not known. The additional benefit is that this strategy introduces some opportunity for cooperative learning if students decide to pair off and quiz one another. There have been several studies (Stevens 2003; Ellison &

Boykin 1994) that show the positive effects of cooperative learning, with Slavin (1991) providing a good overview of cooperative learning and its benefits. Therefore, the strategy of self-quizzing or cooperative quizzing among students is maintained for its benefits of review and its addition of an element of cooperative learning.

A final memory strategy is to break lists down into smaller parts. This strategy most likely finds its basis in psychological research on chunking. Carter, Hardy, and Hardy state, “Inherent in the information processing model is that the human mind can process and retain on average seven bits of information at one time” (2001:226). In a research experiment, Carter, Hardy, and Hardy reported that students learned twenty-one Latin vocabulary words better in three sets of seven than in one list of twenty-one (2001:227).¹³ In fact, the results of this testing were rather dramatic. This strategy could hold significant promise for learning BH vocabulary, though it would have to be combined with other strategies to avoid serial learning of the lists. For example, the strategy could be combined with the use of flashcards, where the flashcards could be divided into sets of seven to be shuffled, allowing the words to be studied in different orders. With smaller chunks, the primacy and recency effects would not be so much an issue, because the smaller size of the list would eliminate a middle part that would not be remembered well. Thus, breaking lists into smaller parts is maintained with the assumption that this strategy would need to be used in conjunction with other strategies.

In this section, two strategies, plain flashcards and written repetition, were eliminated, and one potentially significant strategy, breaking lists into smaller parts, was maintained because of its usefulness in conjunction with other strategies. The other strategies that were maintained in this section were verbal repetition, reviewing, concentrating to avoid distractions, and quizzing. One important word of caution is necessary in light of the fact that it is difficult to eliminate memory strategies as being useful. It must be emphasized that memory strategies are not the best predictors of overall language success. Gu and Johnson (1996:662) reported that the most successful students overall were those who engaged primarily in authentic language use, particularly reading. In fact, using only memorization was a good predictor of low overall language proficiency. Though memory strategies may be useful for pairing form and meaning at the start of learning a word, this learning must be supplemented very quickly with encounters with words in genuine contexts, lest the student’s learning of an item remain at a shallow level.

2.2.6 Visual/Auditory Strategies

A first visual strategy that appears useful for learning vocabulary is arranging words to form patterns on a page. Schmitt (1997:213) cites two studies confirming that words are remembered better if they are grouped spatially on the page in the shapes of rectangles, pluses, Xs, Zs, Ks, and diagonals. In addition to color-coded flashcards, this strategy could be used with the chunking strategy mentioned above, since the grouping of words into shapes might also help with the effects of serial learning. For

¹³ Large numbers are often written out in this study when they are in parallel with or proximity to smaller numbers, in this case “three” and “seven.” This allows for a more uniform presentation.

example, imagine that words were grouped on pages in the shape of Xs. Each time the student went through lists in the shapes of Xs, the student could choose to begin at a different corner of the X. The words could then be learned in four different directions. This practice might avoid the effects of serial learning in the use of lists while also adding a visual element to list learning.

A second visual strategy is to draw pictures of new words. Nation (2001:304–05) promotes the use of pictures in conjunction with the use of flashcards. Although acknowledging that pictures do not work well with some words, he claims that with others pictures can be quite helpful. The benefits provided by pictures may be due to pictures promoting “dual encoding” (Paivio & Desrochers 1981). Nation (2001:304) cites three studies that show a superior effect for pictures over written L1 translation; however, he also cites another study showing that if both a picture and an L1 translation are used, recall is better than with a picture alone. In short, then, though the use of pictures may produce better learning, they can only be used with certain words, and they should be used in conjunction with L1 translations. Even in light of these limitations, the use of pictures can still be a helpful strategy.

Two other related strategies in this category, both auditory in nature, are to sing vocabulary items and to use rhymes to remember vocabulary items. Though not much research has been done on either of these two strategies, both appear as though they would suffer from the same problem as simply recording words and listening, namely serial learning. Stoffer states that learning words in a set order “does not appear desirable or useful at all” (1995:69). For instance, in reading, a student who encountered a word learned by song or rhyme might need to go through an entire song or rhyme in order to remember the word through its connections with the rest of the words. Given this problem, these two strategies are eliminated in this study.

Another strategy in the visual/auditory category is to give oneself a reward or treat. Rewarding or treating oneself may involve visual or auditory aspects. Cameron and Pierce surveyed research on reward and concluded: “On the attitude measure, positive effects emerge from both tangible and verbal reward studies; verbal appears to produce a slightly more positive effect” (1994:384). Considering the importance of motivation in language learning, advising a student to use personal reward appears helpful. Dornyei (2001:113–14) sees rewarding oneself as helpful and refers to it as an “emotional control strategy.” She states, “Certain emotional states or moods ... may disrupt or inhibit action and may undermine our determination, whereas others will put things in an optimistic positive light” (2001:113–14). Through the use of strategies such as self-encouragement, students can put themselves in a frame of mind more conducive to achieving their learning goals. For this reason, rewarding or treating oneself in vocabulary learning should be maintained as a useful strategy.

A final strategy in the visual/auditory category would be for students to talk to others about their feelings in vocabulary learning. Costanza, Derlega, and Winstead (1988:182–190) found that talking to others could help alleviate anxiety if it remained focused on problem solving or unrelated content; however, they also found that talking about feelings could produce a negative effect if negative emotions were the focus of talking. In surveying literature on foreign language learning anxiety, Horwitz states that “consistent negative correlations have been found between language anxiety and

various measures of foreign language achievement” (1995:575). So this strategy could be either beneficial or detrimental. It would be beneficial if the talking focused on problem solving, and detrimental if the talking focused on negative feelings. The strategy will be maintained in this study; however, the wording may be changed in developing a model for learning vocabulary. Instead of being encouraged to “talk about feelings,” students may be encouraged to talk to peers about what strategies have worked best, or about how they have been able to avoid distraction.

2.2.7 Strategies Involving Physical Action

A first strategy in this category would be to use gestures or pantomime for practice. No significant research appears to have been done on this strategy, but it seems to be closely akin to physically acting out new words (see section 2.2.2 above). Since physically acting out new words appears helpful in research, I will assume that gesturing or pantomiming new words might also be helpful.

Another strategy in this category would be to practice words using real objects. Schmitt (1997:216) promotes the use of real objects in learning vocabulary. Students would use this strategy by taping L2 labels onto physical objects. This strategy appears to have the advantage of offering students opportunities to learn words even outside of concentrated study times. For example, imagine that students learned the words **נָכַח** (“to enter”) and **נִצָּחַ** (“he went out”) by taping the words to the outside and inside of different doors of their homes. The students would have multiple encounters with the words without any extra expenditure of time. The only issue with this strategy is that it cannot be applied to all words; however, this strategy could help students decrease their learning load by at least a small amount.

The strategy of physically acting out new words was discussed above under strategies involving creative activities. The strategy was maintained as useful.

Another strategy in this category involves learners visualizing new words. This strategy does not appear at first to involve any physical action; however, many people when visualizing will close their eyes. This strategy has not been widely researched, yet from the findings of one study it does not appear very appealing. Schmitt (1997:207) reports that 50% of students surveyed used the strategy of visualizing a word’s meaning; however, only 38% of students actually thought that the strategy would be helpful. This statistic means that even a significant number of the students who use the strategy of visualization do not feel that it helps them. Due to this negative perception of the usefulness of the strategy, learners might not be very likely to use it, and the strategy might not be helpful to them even if it were used. For these reasons, this strategy will be eliminated as useful in the present study.

A final strategy in the category involving the use of physical action is for learners to relate the word to themselves. This strategy was discussed under the strategies for creating mental linkages and was maintained as a possibly useful strategy.

2.2.8 Strategies Used to Overcome Anxiety

The first strategy within this category is for learners to recognize when they are tense or nervous. As mentioned above, Horwitz (1995:575) has noted the detrimental effect of anxiety on foreign language learning. Dornyei (2001:113–14) suggests several techniques that a learner may use in order to combat tenseness or nervousness in learning. Examples of such “emotional control strategies” would be using relaxation techniques, counting to 10, or praying. This strategy might help students to attain an emotional state conducive to learning.

The next two strategies in this category are to try to relax when afraid of using a word and to encourage oneself when afraid of mistakes. These strategies seem unproductive for learning BH vocabulary because of BH being a text-based language. These strategies are associated with a communicative approach to learning a language. Since BH is learned for the purpose of reading or interacting with BH text at a deeper level and not speaking, these strategies may not be very useful (see section 1.2.2).

The final strategy in this category is to talk to someone else about feelings in learning vocabulary. This strategy was discussed in section 2.2.6 above, and it was maintained as possibly useful.

2.2.9 Strategies Used to Organize Words

The first strategy in this category is to group words by grammatical class. This strategy at first appears to have some benefit since several studies have shown that some types of words, especially nouns, might be easier to learn than others (Laufer 1997b:148–49).¹⁴ Therefore, the reasoning is that nouns should be learned first, giving the student a good start and confidence in vocabulary learning. Another benefit might be learning grammatical facts about words. Yet despite the possible benefits of learning easier words first, there are two problems with this strategy: interference and going against the principle of frequency. The problem of interference was noted in section 1.1.1 (see Nation 2001:303). Areas where interference might occur would be, for example, if BH prepositions were grouped together and if BH adverbs were grouped together. The second problem would be that the most frequent BH words would not be learned first since, as Nation (2001:387) notes, learning words in lexical sets goes against the principle of frequency. In light of the problems of interference and frequency, this strategy will be eliminated in this study.

A second strategy for organizing words is for the learner to break words into parts. This strategy appears unproductive in light of the nature of BH as compared with English and in light of the beginner student’s desire for simpler strategies (Schmitt 1997:201). Word formation in BH is quite different from word formation in English and would be difficult for a beginner to learn. Waltke and O’Connor (1990:84), for example, demonstrate that 12 different words are formed from the BH root

¹⁴ Laufer actually disputes these findings in the reference cited; however, she notes that the findings can only be disputed by indirect evidence. She seems to admit that perhaps nouns could be easier to learn, but that no evidence exists for whether or not nouns or verbs would be easier to learn than adjectives.

חבר ("to join, associate"). A typical explication of BH word formation processes, e.g., Landes (2001:7–39), is quite complicated and lengthy. It is difficult to imagine a beginning student being highly motivated to learn the word formation processes of BH very early on.

The third and fourth strategies for organizing words, grouping new words by topic and using natural associations such as opposites, are similar to the strategy of learning related topics at the same time in the category of strategies used to create mental linkages. These strategies appear to present the problem of interference discussed in section 1.1.1 above. As a result, they do not seem useful for a model for learning BH vocabulary.

2.2.10 Summary

In sections 2.2.1–2.2.9, I examined the various possible strategies for learning BH vocabulary. I eliminated strategies from the list given in section 2.1.2.3 that did not appear useful, maintained strategies that did appear useful, and commented on the extent to which some of the strategies might be useful. Below I present an amended list of the strategies that might be useful for learning BH vocabulary. An asterisk is placed beside strategies that might have only limited usefulness.

<p>Factor 1: Strategies involving authentic language use</p> <p>Read L2 literature and poetry</p>	<p>Factor 2: Strategies involving creative activities</p> <p>Use computer program to practice words</p> <p>Physically act out new words *</p> <p>Use color-coded flashcards (genders)</p>	<p>Factor 3: Strategies used for self-motivation</p> <p>Enjoy learning new vocabulary</p> <p>Feel successful when learning new words</p>
<p>Factor 4: Strategies used to create mental linkages</p> <p>Link word to L1 word similar spelling *</p> <p>Link word to similar sounding L1 word *</p> <p>Create links with already known words *</p> <p>Relate new words to myself</p>	<p>Factor 5: Memory strategies</p> <p>Repeat new word aloud several times</p> <p>Review frequently</p> <p>Concentrate hard to avoid distractions</p> <p>Quiz myself or have others quiz me</p> <p>Break lists into smaller parts *</p>	<p>Factor 6: Visual/auditory strategies</p> <p>Arrange words on page to form patterns</p> <p>Draw pictures of new words *</p> <p>Give myself reward or treat</p> <p>Talk to someone about feelings</p>
<p>Factor 7: Strategies involving physical action</p> <p>Use pantomime and gestures to practice *</p> <p>Practice word by using real objects *</p> <p>Physically act out new words *</p> <p>Relate new words to myself</p>	<p>Factor 8: Strategies used to overcome anxiety</p> <p>Notice when tense or nervous</p> <p>Talk to someone about feelings</p>	

3. Survey and Evaluation of Existing Biblical Hebrew Instructional Materials

3.1 Introduction

In surveying and evaluating current approaches to vocabulary instruction, I will make use of the findings from Chapter 2 of the present study. This discussion will consist of four major sections, three of which will follow the outline of the previous chapter and one which will spotlight two important selections of learning materials. In the first three sections, I will analyze BH instructional materials concerning conceptions of vocabulary and vocabulary learning, and the VLSs presented to learners. In the final section, I will examine the introductory text by Dobson (2005) and the Davar BH vocabularies project (Bulkeley & Wall 2005d), each of which seems to be an exception to much of what will be claimed in the first three sections.

Before beginning the body of this chapter, I would like to address one potential objection to the following analysis. Much of this chapter will be stated in terms of broad generalizations concerning current materials. Indeed, one might validly object that it is unfair to apply such generalizations to BH instructional materials; however, I am not the first to point out that these materials fit into a fairly uniform mold. In an article entitled “Why Hebrew Textbooks are Different Than Those for Other Languages,” Greenspahn (2005:1) makes the following comments:

Over the past ten years, however, there has been a seemingly endless flood of new books, each claiming to have features that set it apart from the others, whether in terms of content or pedagogic method ... The fact of the matter is that they are all fundamentally alike. The real reason for their proliferation has less to do with the emergence of new philosophies than with the pressures of the marketplace ...

A more amiable comment is that of Van der Merwe (2002) who states, “these new works offer only partial solutions for improving the instruction of the language.” In short, as claimed in these two citations, BH materials are quite uniform and the places where they do differ are not significant, only partially addressing the problems of instruction.¹ In commencing, I do not wish to paint caricatures of the materials being examined; however, I do believe that the generalizations to follow can be stated on fairly solid ground.

3.2 Conceptions of Vocabulary

I will begin by surveying and evaluating the conceptions of vocabulary found in current materials. I reiterate the understanding of vocabulary from the previous chapter, namely that vocabulary should be defined in terms of lexical items. Lexical items should include multi-word items, exclude regularly inflected forms, include irregular and semi-productive forms, and include derived forms. The

¹ Also, Walker-Jones (2003:1) states, “*Almost all* Hebrew grammars use what applied linguists refer to as a Grammar-Translation Method.”

examination to follow will look first at introductory grammars and then at vocabulary specific materials.

3.2.1 Introductory Grammars

As should be evident from Greenspahn's (2005:1) comment, it would be quite difficult to trace the conceptions of vocabulary in all existing introductory grammars due to their number. Therefore, as previously indicated, it will be necessary to speak about conceptions of vocabulary by means of a few generalizations, with specific texts being cited to illustrate them. In this section, the primary generalization is that current introductory grammars implicitly define vocabulary in terms of individual words and not lexical items. In light of this, three secondary claims can be made, namely that these texts exclude multi-word items, exclude inflected forms (including irregular [e.g., like English *go-went*] and semi-productive forms [e.g., like English *drink-drank*]), and include derived forms. The exclusion of multi-word items, irregulars, and semi-productive forms as vocabulary does not conform to the findings within applied linguistics, whereas the exclusion of regularly inflected forms and the inclusion of derived forms do conform to these findings. Again, these generalizations may not universally characterize all introductory grammars (e.g., a particular grammar may include inflected forms); however, I do believe that they provide an accurate summary of the current state of affairs.

3.2.1.1 *A Word-Based Perception of Vocabulary*

Whether or not introductory grammars define vocabulary in terms of individual words is usually clear from the prefaces or vocabulary sections of these texts. This word-based perception appears in texts ranging from the mid-1800s all the way to the present day. A few examples are as follows (italics are those of the present author):

An alphabetical index follows, by the aid of which the student can readily find the place of any *word* in the Vocabulary (Green 1868:57).

Furthermore, I have revised the vocabularies to use as many of the "often-used" *words* as possible (Yates 1954:xv).

The aim of this book is ... to enable one to acquire a mastery over a basic vocabulary of Biblical Hebrew ... roughly a third of the *words* of highest frequency in Biblical Hebrew (fifty occurrences and more) are included (Greenberg 1965:iv).

This [vocabulary] list contains all the Hebrew *words* that occur ... (Lasor 1978b:*1).

The 700-*word* vocabulary of the book ... (Paine 1985:iv).

There are nine vocabularies ... All told there are about 160 *words* ... (Bornemann 1998:xiii).

Vocabularies include all *words* occurring one hundred times or more ... (Walker-Jones 2003:5).

Students are not responsible for learning a block of *words* over a certain number of lessons. Instead a specific number of *words* is assigned per lesson ... (Kittel, Hoffer & Wright 2005:xxiii).

This finding is to be expected for texts written before many of the findings of modern linguistics research; however, a word-based understanding of vocabulary has persisted even in the most current grammars.

One text that appears as though it might be an exception to this word-based perception of vocabulary is Bartelt (2000). A statement from the preface makes the text particularly interesting for the present study: “Grouping of vocabulary by *idiomatic phrases, word pairs*, or semantic fields has been attempted where possible” (2000:viii). Though the grouping of words by semantic fields is a questionable practice (Nation 2001:303),² there seems to be at least an acknowledgment of the importance of idioms and word pairs in learning vocabulary. Problematically, however, lexical items other than words do not emerge extensively throughout the remainder of the text. For instance, idioms are only included beneath the glosses of the individual words of the idiom (a problem that will be discussed further in section 3.2.1.2; e.g., see Bartelt 2000:260,261). Thus, Though this text does at least acknowledge lexical items other than words in the preface, the view of vocabulary still remains largely word-based.

3.2.1.2 *The Exclusion of Multi-Word Items*

The exclusion of multi-word items in introductory grammars likely springs from their word-based understanding of vocabulary. Greenspahn recognizes the exclusion of multi-word items, stating: “rather than expecting students to master phrases, the Hebrew books list isolated words...” (2005:1). The relative exclusion of multi-word items is apparent from looking at the vocabulary lists and glossaries. This does not mean that the materials include no multi-word items at all, but they do not include them extensively, especially with regard to how frequent the items are in actual language usage. When multi-word items do appear, such appearances are relatively infrequent, rarely more than two words long, and often not provided separate entries as vocabulary items.

In general, if multi-word items are included in vocabulary sections or glossaries at all, the two that appear most common are **כִּי־אֲשֶׁר** (“but rather”) and **עַל־כֵּן** (“therefore”) (e.g., in such classic texts as Weingreen 1959:295; and Lambdin 1971:322; though only in glosses). These items resemble what Lewis (1997:259) refers to as sentence frames/heads, and he includes phrases like “and finally” in this category. With regard to idioms, some texts include short ones, such as **עַד־עַלְמַם** (“forever”) (Simon, Resnikoff & Motzkin 1992:407) and **אֶרֶךְ אַפַּיִם** (“slow to anger”) (Garrett 2002:356). Despite these inclusions, the number of multi-word items is normally very small. Furthermore, although some texts do include a handful of sentence frames or idioms, other important types of multi-word items, for example collocations, are virtually non-existent.

Even a glance at the vocabulary sections or glossaries of grammars reveals that multi-word items are rarely longer than two words. As in the aforementioned examples of **כִּי־אֲשֶׁר**, **עַל־כֵּן**, **עַד־עַלְמַם**, and **אֶרֶךְ אַפַּיִם**, all of the items located consist of only two words. In texts where items of more than two words are defined, these items are usually not presented as vocabulary to be learned. Instead, they are usually presented only as a means to being able to complete a particular reading (see the various

² Nation (2001:303) argues that grouping semantically related words together early in learning can cause interference.

examples in Greenberg 1965:139–69). In other words, learners are not instructed to seek passive recall. Thus, it appears that multi-word items of more than two words are particularly rare, especially when excluding any that are not explicitly presented as vocabulary.

A glance at the vocabulary sections or glossaries of the textbooks also shows that multi-word items are not given their own entries as vocabulary. An example of this type of inclusion would be that the multi-word item **לְכַּדְּךָ** (“but rather”) is often found underneath the entry for **לְכַּדְּךָ** (“for, because”) or **אִם** (“if, then”) (e.g., Weingreen 1959:295; Lambdin 1971:322). In this type of inclusion, the items are less salient, making it less likely that learners will commit their meanings to memory. Thus, including items in this way might produce a similar result to not including them at all. In summary, multi-word items are largely excluded within introductory grammars, especially when one considers their infrequency, length, and salience. Once again, the exclusion of multi-word items does not conform to the findings of the previous chapter.

3.2.1.3 The Exclusion of Inflected Forms

The exclusion of inflected forms is multi-faceted; thus, I will treat the exclusion of irregular and semi-productive forms separately from the exclusion of regularly inflected forms. The exclusion of irregular and semi-productive forms is *undesirable* in light of the findings from the previous chapter. Introductory texts generally exclude irregulars and semi-productives in three ways: by not including them at all, by including them only in glosses, and by including relatively few of them. First, many grammars do not include irregular or semi-productive forms as vocabulary in any way whatsoever (Hostetter 2000; Walker-Jones 2003; among others). Second, some texts include these forms only in the glosses of base vocabulary words (Weingreen 1959; Greenberg 1965; among others). As with including multi-word items in glosses, not giving irregular and semi-productive forms their own entries as vocabulary makes them less salient, causing it to be less likely that learners will commit them to memory. Third, one text, Garrett (2002), does include these kinds of forms as vocabulary, though the number of irregular and semi-productive forms is very few.³ Thus, irregular and semi-productive forms are generally excluded in current materials, though not in a completely uniform fashion.

With regard to regularly inflected forms, the analysis is similar, but in the reverse: the exclusion of regularly inflected forms is *desirable*. Some texts do not include regularly inflected forms as vocabulary in any way (Hostetter 2000; Walker-Jones 2003; among others). Other texts include regularly inflected forms only in the glosses of base vocabulary words, making it unlikely that these forms will be learned as vocabulary items in their own right (Weingreen 1959; Greenberg 1965;

³ It is unclear whether or not Kittel, Hoffer, and Wright (2005) encourage students to learn inflected forms as vocabulary. The introduction states that items in bold should be memorized (2005:xiii). In the vocabulary lists the inflected forms appear to be in a bold font; however, the grammatical information for the inflected forms is not in bold. Thus, it appears that the grammatical information is not presented for learning; however, if this is the case, it could be made clearer by not having all of the Hebrew in bold.

among others). Finally, one text (Garrett 2002) does include some regularly inflected forms as vocabulary items; however, the number is very few, so that this text does not significantly depart from the findings from the applied linguistics literature.⁴

3.2.1.4 The Inclusion of Derived Forms

With the number of introductory grammars being quite extensive, it is a rare occasion when one can say that something is unequivocally true of all of them. For instance, the texts referred to in the previous two sections exclude multi-word items and inflected forms; however, not all do this in the same way. Yet, with reference to derived forms, it appears that all BH introductory texts include them as vocabulary items with their own entries. This statement is easily confirmed by choosing a common derived form, such as *מזבח* (“altar”), i.e., from the root *זבח* (“to sacrifice”), and tracing its appearance in the glossaries or vocabulary lists of available grammars. This fairly quickly reveals that current materials contain derived forms as vocabulary with their own entries. As stated above, this finding does conform to the research within applied linguistics. With this discussion of conceptions of vocabulary in introductory grammars completed, I reiterate the generalizations from section 3.2.1, namely that introductory BH grammars view vocabulary as individual words, with multi-word items excluded, inflected forms excluded, and derived forms included.

3.2.2 Vocabulary Specific Texts

Since fewer BH vocabulary specific materials exist than introductory grammars, it would be possible to examine them in more detail. However, it does not appear that a more extensive examination of these materials would be very beneficial because the same generalizations that were true concerning the introductory grammars appear to be true for them as well. First, BH vocabulary materials implicitly define vocabulary as individual words and not lexical items. Secondly, these materials exclude multi-word items, exclude inflected words (including irregulars and semi-productive forms), and include derived words. Thus, the examination of the vocabulary specific materials will follow along the same lines as the examination of introductory grammars.

3.2.2.1 A Word-Based Perception of Vocabulary

BH vocabulary specific materials have continued to define vocabulary in terms of individual words, not lexical items. The overwhelming tendency to define vocabulary as words emerges in their prefaces or introductions. Examples of this tendency are as follows:

If the learner will memorize five or six *words* a day, within six or eight months he will have mastered a vocabulary ... (Harper 1890:v).

⁴ This conforms to the earlier criticism that the inclusion of only a few multi-word items does not place the texts in line with the applied linguistics research.

The student of Hebrew need master a vocabulary of less than 800 *words* ... (Watts 1960:Introduction).

In learning *words*, the student should select from all three lists as he proceeds through the vocabularies ... (Landes 1961:vi).

The [vocabulary] lists that follow are of Hebrew *words* that occur ten times or more ... (Payne 1962:Foreword).

For the Hebrew vocabulary sections (Sections 1–5) an attempt has been made to include every *word* that occurs ten times or more (Mitchel 1984:ix).

This set contains 978 cards covering over 1200 *words* from the vocabulary of the Hebrew Bible (Dillard 1999:1).

Of course, while this is going on, the student must begin to learn the meanings of *words*, and start building a basic vocabulary (Landes 2001:2).

Old Testament Hebrew Vocabulary consists of all the *words* that occur ... (Pennington 2003:4).

Ideally, the study of vocabulary should focus on high frequency *words* ... (Van Pelt & Pratico 2003:viii).

As was the case with the introductory grammars, this finding is to be expected for materials written before much applied linguistics research had occurred; however, this word-based perception has persisted even in the most recent materials, such as Dillard (1999), Landes (2001), and Van Pelt and Pratico (2003).

3.2.2.2 *The Exclusion of Multi-Word Items*

Multi-word items are relatively often excluded, especially when one considers how frequent they are in language usage. The three statements concerning multi-word items in introductory grammars apply here as well, namely that multi-word items are infrequent, usually no more than two words, and are often not given their own entries as vocabulary. First, when scanning through these materials, it is difficult to find multi-word items in general. Usually, as with the introductory grammars, they may be restricted to items like *כִּי־אֲבִי* (“but rather”) and *עַל־כֵּן* (“therefore”) (Landes 2001:202,209). The only exception to this finding, ironically enough, appears in the vocabulary text by Harper (1890). He includes an entire section of multi-word items. He includes a section of multi-word items demonstrating idiomatic usages of the number of nouns, the determination of nouns, apposition, and more (1890:169–72); however, he appears to have been about a hundred years ahead of his time, as successive authors who have revised his lists have consistently eliminated the section of multi-word items (Watts 1960; Landes 1961; Payne 1962).

Once again, as with the introductory grammars, multi-word items in the vocabulary materials are restricted to phrases of no more than two words. In fact, there seems to be only one vocabulary specific text that includes items of more than two words. The exception is again the text by Harper, (e.g., he includes phrases like *בֶּן־חַמֵּשׁ מֵאוֹת שָׁנָה* [“son of 500 years,” or “500 years old”] for learning how ages are stated in BH, and *אֵלֶּה מִזֶּה וְאֵלֶּה מִזֶּה* [“some on one side and some on the other side”] for learning an idiomatic usage of *אֵלֶּה* [“these”] [1890:169–72]); however, once more successive

authors revising his lists have eliminated multi-word items of more than two words (Watts 1960; Landes 1961; Payne 1962).

Van Pelt and Pratico (2003) include more multi-word items than any other material; however, they include them only within the glosses of individual words.⁵ As previously mentioned, this type of inclusion makes the multi-word items less salient. Thus, learners may not memorize these items separately, producing a similar result to not including the item at all.

3.2.2.3 The Exclusion of Inflected Forms

It is clear from the survey that the vocabulary texts do not include inflected forms, whether regular, irregular, or semi-productive. Here, the vocabulary texts are somewhat more uniform than the introductory grammars in that there are only two ways in which they exclude inflected forms. They exclude these forms by not including them at all (Landes 2001), or by only including them in glosses (Van Pelt & Pratico 2003). As mentioned, including items in glosses makes them less salient. Once more, the exclusion of regularly inflected forms conforms to the findings within linguistics, though the exclusion of irregulars and semi-productives does not.

3.2.2.4 The Inclusion of Derived Forms

As was the case with introductory grammars, the vocabulary materials all include derived forms. A similar test using a common derived word like אֲלֹתַי (“altar”) reveals that all existing vocabulary specific materials contain derived forms. As mentioned above, the inclusion of derived forms conforms to the findings within applied linguistics.

3.2.3 Summary

To summarize sections 3.2.1–3.2.2: The data within the introductory grammars and vocabulary specific materials appear quite uniform. Vocabulary is defined in terms of individual words, with multi-word items and inflected forms being excluded, and derived forms being included. The exclusion of multi-word items, irregulars, and semi-productives does not conform to the findings of the previous chapter, whereas the exclusion of regularly inflected forms and the inclusion of derived forms do. Against this background, I will now examine these same materials concerning conceptions of vocabulary learning.

⁵ It seems clear, however, that Van Pelt and Pratico (2003) do not view their inclusions as “multi-word items.” They state that “grammatical constructions” are included in the glosses (2003:x). This understanding would explain why many of the multi-word inclusions in the text lack the non-compositionality characteristic of multi-word items.

3.3 Conceptions of Vocabulary Learning

Before beginning this section, it is necessary to restate the definition of vocabulary learning proposed in the previous chapter of this study. Vocabulary learning was defined as the acquisition of any aspect of knowledge about a lexical item, including its meaning(s), written form, spoken form (i.e., how it is pronounced when read aloud in the case of BH), grammatical behavior, collocations, associations, and frequency, with the learning of the item's meaning being such that it can be passively recalled. Moreover, meanings and associations are best learned through explicit processes, while written form, spoken form, grammatical behavior, collocations, and frequency are best learned through implicit processes. The existing BH materials will be surveyed to determine (a) whether each of these aspects of word knowledge is addressed, (b) whether passive recall is sought for the meanings of items, and (c) whether aspects of word knowledge are sought through proper processes.

3.3.1 Introductory Grammars

As was the case in section 3.2, it would be quite difficult to trace the conceptions of vocabulary learning in all of the available introductory grammars. Once again, it will be necessary to proceed by means of a few generalizations. First, concerning aspects of vocabulary knowledge, introductory grammars generally focus on meaning(s), written form, spoken form (in this case the word as it is pronounced when reading BH text aloud), and frequency; however, they often focus only partially on grammatical behavior and associations, and often neglect collocations. Second, concerning level of knowledge, they sometimes seek passive recall and sometimes seek active recall. Third, all vocabulary knowledge appears to be sought through primarily explicit processes.

3.3.1.1 Aspects of Vocabulary Knowledge Sought

In most texts, it is clear that the authors focus upon meaning(s), written form, and spoken form. This focus is apparent from the fact that BH words often appear in lists with paired-associates. Even inductive texts (Lasor 1978b; Hunter 1988), which take the view that words would be more successfully learned when encountered in genuine contexts, contain lists. The pairing of BH words with their meanings seems to be an inevitable inclusion in introductory texts.⁶ Although not explicitly stated, it is implied that the texts expect students to learn the meanings, written forms, and spoken forms of these words.

A few introductory texts do focus more explicitly on spoken form by providing sound recordings of the target words. Kittel, Hoffer, and Wright (2005) provide these recordings on a companion CD that can be purchased separately from their textbook. Pratico and Van Pelt (2001), on the other hand, include the sound recordings on a companion CD-ROM that is included with their text in a flashcard program called *Flashworks*. I will not comment here on the efficacy of these approaches as they

⁶ It appears from the applied linguistics literature that the inclusion of lists is helpful, though there might be better ways of displaying the lists than in columns (Schmitt 1997:213).

appear in these texts; for now it is sufficient to note that some texts do contain a more explicit focus on spoken form.

Most introductory texts also focus explicitly on frequency. This point is clear from the fact that introductory grammars generally compile their word lists based upon the most frequently occurring words in the Hebrew Bible (e.g., Walker-Jones 2003). Even inductive texts like Hunter (1988) and Lasor (1978b) include supplementary lists of the most frequent words in the Hebrew Bible that do not occur in their readings.

Though introductory BH grammars do focus on several important aspects of vocabulary knowledge, they often only partially treat grammatical behavior and associations, and neglect collocations. The fact that these texts focus only partially on the grammatical behavior of vocabulary items is unexpected in view of the number of paradigms included in many of them. In light of the paradigms, it might easily be assumed that the texts do focus on grammatical behavior. However, the distinction that needs to be made is that introductory grammars maintain a focus on the grammar *of the language as a whole*, whereas what is at issue here is the grammar *of particular vocabulary items*. According to Lewis (1993:142), the grammatical behavior of a word is simply “the set of patterns in which it occurs.”⁷ This distinction is not splitting hairs.

Sometimes the lexical nature of a word constrains what happens grammatically in exactly the way that one would expect. However, due to cultural differences, sometimes grammar is not constrained in the way that one would expect. The first illustration is intended to show how complex the lexical nature of BH words can be. I will follow with an illustration of how the lexical nature of a word affects what happens grammatically at the phrasal level.

First, the semantically related roots הרה (“to become pregnant”) and ילד (“to give birth”) demonstrate the complexity of the lexical nature of BH words. In a prose narrative, one would not expect to find either of these words in the *Qal* Perfect or Imperfect 3rd Masculine Singular form. In other words, one would not expect to find the forms “he became pregnant/will become pregnant” or “he gave birth/will give birth.” And, for הרה this is in fact the case. This root never occurs in the *Qal* Perfect or Imperfect 3rd Masculine Singular form in a prose narrative. This is a case in which the lexical nature of a word constrains grammar in the way that one would expect. Another example of this type of constraint involves roots related to killing, like הרג (“to slay”) and נכה (“to smite”). One would not expect to find these roots in the *Hitpael* Perfect First Person Singular or Plural in prose narrative. In other words, one would not expect to read “I/we slayed/smote myself/ourselves.” And, this is indeed the case; these forms do not occur.

Against the background of הרה, one is surprised to find that the root ילד does not constrain grammar in the way that one expects. In other words, it is relatively common to find this root in the *Qal* Perfect

⁷ Nation’s understanding of the grammatical behavior of words is quite similar, though he adds “part of speech” information to it: “In order to use a word it is necessary to know what part of speech it is and what grammatical patterns it can fit into” (2001:55).

or Imperfect 3rd Masculine Singular form within prose narrative. There are nineteen occurrences of this form in fifteen verses within prose narrative with three uses in Gen. 4.18 alone. Translators often handle this form by translating it “he fathered,” rather than the awkward “he gave birth.” Thus, the grammatical behavior of BH words is much more complex and interesting than the learning of paradigms would suggest. Learning paradigms tells one very little about the actual occurrences of *הרה* and *ילד*. Indeed, it can be argued in light of these complexities that learners might benefit more from time spent learning encyclopedic information about these words, rather than learning paradigms. Second, it is clear that sometimes the lexical nature of a BH word constrains what happens grammatically at the phrasal level. For example, the lexical nature of the root *ברא* (“to create”) determines the subject, stated or implied (i.e., when a pronoun is used in place of the noun), when it occurs in an active form. There are twenty-nine occurrences of the root *ברא* in active forms in twenty-five verses. In every case, the stated or implied subject is *יהוה* (“Lord”) or *אלהים* (“God”). Gen. 1.27 provides a prototypical example of the root with both a stated subject and implied subject:

וַיִּבְרָא אֱלֹהִים אֶת־הָאָדָם בְּצַלְמוֹ בְּצֶלֶם אֱלֹהִים בָּרָא אֹתוֹ זָכָר וּנְקֵבָה בָּרָא אֹתָם

And *God created* humankind in his image, in the image of God *he created* him, male and female *he created* them.

Since most of the attention given to the grammatical behavior of words in BH seems to be focused on learning paradigms, it appears that learners will miss a significant amount of information related to the actual occurrences of words in the Hebrew Bible.

These examples illustrate that words and phrases have their own patterns. Thus, the question still remains as to what this means for vocabulary learning. In my estimation, it means that learning paradigms does not really tell the learner very much about the grammatical behavior of particular vocabulary items. For instance, learning the *Qal* paradigm does not tell the learner much about the actual occurrences of the root *הרה*. Learning the *hithpael* paradigm does not tell the learner much about the actual occurrences of the root *הרג*. Learning the various paradigms for the root *ברא* does not tell the learner anything about who is eligible to be the subject of this root in the Hebrew Bible. Thus, focusing on the grammatical behavior of words may be quite different than focusing on the grammar of the language as a whole. Obviously, it would take a tremendous amount of time to focus on the grammatical behavior of a significant number of individual words, which is why in this study I claim that learning the grammatical behavior of words is more amenable to implicit learning (i.e., extensive reading for meaning). This does not mean that explicit focus on the grammatical behavior of individual words should not be emphasized, indeed it should be, yet one must be very selective concerning which individual words will receive explicit focus (i.e., important, frequently occurring words).

I have focused thus far on how introductory grammars neglect the grammatical behavior of words. However, it must be noted that when these texts give part of speech information, they do focus

partially on grammatical behavior. I would claim, however, that part of speech may be the least important part of a word's grammatical behavior as words can function differently than their parts of speech may indicate (Radford, Atkinson, Britain, Clashen & Spencer 1999:165). One simple example is the participial form of a verb functioning as a substantive, e.g., as in the *Qal* participle masculine singular form סֹפֵר meaning “scribe.” As another example, one might take the word לְמַעַן, which according to Van der Merwe, Naudé, and Kroeze (forthcoming, 515), “may be used as a secondary preposition and conjunctive adverb.” It functions as a preposition in Ps. 23.3 “לְמַעַן שְׁמוֹ” (“for the sake of his name”). It functions as a conjunction in Ex. 20.12 “לְמַעַן יֵאָרְכוּ יְמֵיךָ” (“so that your days may be long”). The word class of this lexeme is determined by the syntactic pattern in which it occurs. Thus, the word class label used is often not very helpful. These two examples help to illustrate that the more important part of a word's grammatical behavior may be its patterns of occurrence rather than its part of speech, since part of speech is fluid for many words.

A potential objection to the claim that introductory texts focus only partially on learning associations concerns the fact that texts often do focus on cognate associations. Indeed, many texts do include associations by cognate (Kittel, Hoffer & Wright 2005; among others); however, many texts do not (Walker-Jones 2003; among others). Furthermore, it is clear that these texts often completely neglect other important types of associations, such as synonymy, antonymy, and semantic domain. Three apparent exceptions here would be Hostetter (2000) and Greenberg (1965), who include exercises focusing on synonyms and antonyms, though the exercises are very limited, and Bartelt (2000:viii), who was cited above as listing words by “idioms, word pairs, and *semantic fields*.” Thus, the overall view is that texts may encourage association by cognate, though not all do, and that important associations like synonymy, antonymy, and semantic domain are neglected.

Though introductory texts may focus partially on grammatical behavior and associations, almost all of them fail to focus on collocation. There are relatively few, if any, exercises in these texts encouraging learners to practice with common phrases. Furthermore, no extensive reading is offered where students might be encouraged to notice recurring patterns. The one exception here is Garrett (2002), who includes “Learn the Verb” exercises in an attempt to present verbs with other common words with which they may occur. Problematically, he only presents these exercises for verbs, and even among the verbs, he does not include many of the more frequent multi-word items in the Hebrew Bible involving verbs, such as the phrasal verb אָמַר + (root) אָמַר (“say to”; for an explanation of how this was determined to be a phrasal verb, see Chapter 4). One might argue that inductive approaches do allow for a focus on collocation simply by helping students to read and allowing them to see which words frequently occur together. The fact that collocations might best be learned through reading is a point well taken; however, I would disagree that current inductive approaches allow students to learn collocations, because they do not provide enough text exposure for many important collocations to be recognized. I will make this issue clear below when I discuss implicit learning (see section 3.3.1.3).

3.3.1.2 Levels of Vocabulary Knowledge Sought

Introductory grammars appear split concerning what level of vocabulary knowledge they seek (for the terminology, see section 2.1.1.2 above). The two principal levels sought are passive recall and active recall. It is clear that most, if not all texts seek at least passive recall as the key word associated with vocabulary is *memorize*. One way of determining whether texts seek active or passive recall would be by looking at the exercises. Texts that include only Hebrew to English exercises and not English to Hebrew (e.g., Kelley 1992) seek passive recall, whereas those that include English to Hebrew exercises (e.g., Ross 2001) seek active recall. Those texts that seek passive recall conform most closely to the findings in applied linguistics concerning what level of vocabulary knowledge is the best predictor of foreign language learning success (Laufer & Goldstein 2004:407). The only exception to the texts that seek either passive or active recall is the grammar by Lehmann, Raizen, and Hewitt (1999), which appears to promote recognition level (though this is not explicitly stated in the text). This attribute of the text likely has to do with the inclusion of those who may not be “religious professionals” in its readership (1999:xiii).

3.3.1.3 Processes Used in Vocabulary Learning

I will make one generalization with which some proponents of an inductive approach may disagree. It appears that all aspects of vocabulary knowledge in introductory BH grammars are sought primarily through explicit processes, not allowing for sufficient implicit learning.⁸ This generalization could be quite important because of the scholarly claim that many aspects of vocabulary knowledge are better gained through implicit processes. In view of the potential importance of this generalization, I will discuss at length the reasoning for it and also address one potential objection.

There are two reasons for stating that all aspects of vocabulary knowledge are sought through explicit processes. First, when activities that could involve implicit processes are included (i.e., reading) they almost invariably include a focus on form, which does not allow for these processes. Second, activities that might promote implicit processes are simply not extensive enough to lead to significant implicit learning.

DeKeyser has defined implicit learning as “learning without awareness of what is being learned” (2003:314). This definition is adequate, although some clarification may be needed concerning the expression “without awareness,” which does not imply that the learners are not paying attention to what they are doing. Ellis (1994:215) states that implicit learning takes place when learners pay “simple attention” to input, which means that they are trying to understand the overall

⁸ I refrain from saying that all aspects of vocabulary are sought through *exclusively* explicit processes since some researchers believe that implicit processes are at work to some degree even in the most explicit processes (Sun, Slusarz & Terry 2005). However, scholars such as Ellis (1994) do see almost a complete dissociation between implicit and explicit processes. Thus, in light of the fact that this issue is still somewhat debated, I claim that all aspects of vocabulary knowledge are sought through *primarily* explicit processes, not ruling out the possibility that implicit processes are at work to a small degree.

message without explicitly focusing on form. Attendance to form would imply more than “simple attention,” and would thus imply that explicit processes and not implicit processes are at work. Thus, an example of an activity in which implicit learning would take place in BH instruction would be extensive reading for meaning.

Against this background, DeKeyser distinguishes implicit learning from inductive learning. He defines inductive learning as “going from the particular to the general, from examples to rules” and implicit learning as “learning without awareness” (2003:314). These two types of learning are not mutually exclusive; however, they are distinct. After distinguishing between inductive and implicit learning, DeKeyser shows how these two types of learning can interact. He explains that learning can be deductive/explicit, deductive/implicit, inductive/explicit, or inductive/implicit. Inductive/explicit learning would be reading in order to discover grammatical rules (2003:314–15). Inductive/implicit learning would be reading that focuses on meaning and not on rule discovery.

After reviewing BH introductory grammars, I would argue that most, if not all, reading is form focused and, therefore, is inductive/explicit. A strong argument that BH instruction focuses on explicit processes to the near exclusion of implicit processes comes from looking at BH readers (Ben Zvi 1993; Goldstein 2001; Vance 2003). These readers are meant as intermediate texts to be used after the student has mastered the elementary grammar of the language. If this is the type of reading that students are to be working toward, then these texts should give an indication of the type of reading begun in introductory grammars. Thus, it is possible to look at these readers as representative of the type of instruction in introductory grammars. These BH readers include reading that is almost exclusively form focused. One clear indication is that the texts invariably include verb analysis either in the midst of (Vance 2003) or after the readings (Goldstein 2001). Another indication comes from the focus on translation found in these readers. It appears almost as if *reading* means *translation*. Thus, it appears that reading in BH instructional materials is primarily form focused, not allowing sufficiently for implicit processes.

Concerning the second reasoning above, it seems clear that even if activities promoting implicit processes are included, they do not provide adequate exposure to texts for significant implicit learning to take place. No definite determinations have been made concerning the amount of exposure needed in order for significant implicit learning to take place; however, it appears from several quotes from Ellis that the amount needed is quite significant. He states, “Fluent language users have had tens of thousands of hours on task. They have processed many millions of utterances involving tens of thousands of types presented as innumerable tokens” (2003:82). Furthermore, concerning the implicit learning of phonotactic patterns, word forms, formulas, phrases, idioms, word collocation information, and grammatical class information, he states, “As long as the speech stream is attended, then a sufficient *mass* of exposure will guarantee the automatic analysis of information” (1997:133). Thus, although the exact amount of exposure remains vague, the general view is that the input needed for implicit learning is quite large.

Despite this ambiguity, it might be possible to determine a more specific target amount of exposure for introductory BH instructional materials by looking at a contiguous area of study. This area concerns practical experiments in extensive and graded reading. Two studies, one by Cho, Ahn, and Krashen (2005) and one by Cho, Kim, and Krashen (2004), show that with only forty minutes of extensive English reading for pleasure per week, grade school students whose native language was Chinese showed significant improvements in overall linguistic ability. Thus, these two studies might provide a good starting point by showing that beginners could significantly improve with forty minutes of meaning-focused exposure to input per week. Yet this forty minutes should be divided up to coincide with Day and Bamford's (1998:84) determination that beginning students should not do more than about twenty minutes of meaning-focused reading at one time. I will discuss a potential procedure in Chapter 4 based on Dobson (2005) and Hulstijn (2003); however, for now, I would simply state that no current introductory grammar includes this amount of *meaning-focused* reading per week.

I will attempt to confirm the lack of adequate text coverage in BH instructional materials by looking again at current BH readers. If the aforementioned amount of reading needs to be done in order for implicit learning to take place, then how much reading do BH readers include? According to several searches using Accordance software, the word counts for current BH readers are: Ben Zvi (1993) – 2,299; Goldstein (2001) – 4,400; and Vance (2003) – 1,814. I would claim that these texts do not even approach the amounts of meaning-focused reading that could be done in as little as forty minutes per week. The reason for the low number of encounters with words is that current BH materials include primarily, if not exclusively, form-focused reading (i.e., this is inductive/explicit learning).

I have gone into some detail in order to explain what implicit learning entails and why current BH introductory grammars do not promote it. Now, I would like to answer another potential objection that may arise concerning this critique. Some might question the importance of implicit learning along these lines: "If implicit learning is so important and if current BH introductory grammars do not include it, then how have the current materials been successful at producing proficient students in the past?" I would attempt to answer this objection in two ways, first by clarifying what is actually being claimed here, and second by questioning part of this argumentation.

First, I would answer such an objection by stating that I am not claiming that various aspects of vocabulary knowledge *cannot* be learned by primarily explicit processes. Instead, I am putting forth a more modest proposal that various aspects of vocabulary knowledge could be *better* acquired through implicit processes. Second, I would dispute the second part of the argument above that current instructional materials have been successful at producing proficient users of BH. By dint of experience, I have encountered students who have taken three semesters of BH and have never used that knowledge again. I have been enrolled in BH exegesis courses with a number of students who could neither pronounce nor translate BH very well. Furthermore, I would cite a 1983 study noted by Van der Merwe (2005b) showing that only 31% of pastors in the Dutch Reformed Church, after having taken BH, actually read from their Hebrew Bibles regularly. If methodologies have remained

virtually the same as Greenspahn (2005) and Van der Merwe (2002) have claimed, then I would suggest that this statistic likely still holds true for most learners of BH. Thus, though some may learn BH through primarily explicit processes, I am skeptical that this produces a large number of proficient users of BH.

Since this discussion has been quite lengthy, I will summarize the findings. First, I have stated that all aspects of vocabulary knowledge are sought through primarily, if not exclusively, explicit processes. The reasoning behind this claim is that BH introductory grammars generally do not include activities that would promote implicit learning; and when such activities are included, they do not provide enough exposure to text to allow for significant learning. I will now move on to discuss the view of vocabulary learning held in current BH vocabulary specific materials.

3.3.2 Vocabulary Specific Materials

In brief, the conceptions of vocabulary learning in the vocabulary specific materials appear to follow the same pattern as the introductory grammars, though differing in a few details. In view of these similarities, the following are true of the vocabulary specific materials: they focus on meaning(s), written form, spoken form, and frequency, but only partially on grammatical behavior and associations, and not on collocation; they encourage passive recall; and they promote primarily, if not exclusively, explicit learning.

The focus on form and meaning in these texts is apparent from the universal presentation of paired word associates. One of the materials, Pennington (2003), contains a more explicit focus on spoken form by including sound recordings of word lists. The focus on frequency can be seen quite clearly from the fact that all of these materials compile their words based upon frequency of occurrence. Even materials that promote learning words by grammatical category (Dillard 1999) or cognate (Landes 2001) have frequency included in one way or another.

Grammatical behavior, once again, refers to the grammatical behavior of particular words. There is no explicit or implicit focus on the patterns into which individual vocabulary items can fall, though part of speech information is often provided. Important associations, such as synonymy, antonymy, and semantic domain, are overlooked, despite the fact that cognate relationships are sometimes presented.⁹ One unique exception to overlooking other types of associations would be the section on homonyms in Van Pelt and Pratico (2003:271–77), but I am not aware of any vocabulary text, other than perhaps Harper (1890:169–72), that includes a focus on collocation, with the collocations even in Harper being sparse.

The emphasis on passive recall can be seen quite clearly, as was the case with introductory grammars, by noting that the most common word used in conjunction with vocabulary learning is *memorize*. Van Pelt and Pratico state, “In fact, those who would minimize the issue of vocabulary *memorization* will

⁹ Van Pelt and Pratico (2003:90) admit that not all words that need to be learned will have cognate relationships.

almost certainly struggle with proficiency in the language and find it difficult to fully realize the benefits of studying and reading Hebrew” (2003:xi). However, unlike some of the introductory grammars, memorization in the vocabulary specific materials does not appear to refer to seeking active recall. The current vocabulary materials conform to the applied linguistics literature in this regard.

I previously stated that all learning promoted in BH introductory grammars is explicit. The same holds true for the vocabulary specific materials, namely no mechanism (i.e., extensive meaning-focused reading) is provided for implicit learning to take place. Thus, learners using these materials do not get enough text exposure for implicit learning. Indeed, the vocabulary specific materials provide no readings at all. This may result from the authors seeing these materials as supplements to existing textbooks. In other words, the authors likely see the provision of readings as the place of the introductory grammar.

Summarizing sections 3.3.1 and 3.3.2, three statements hold true for both introductory grammars and vocabulary specific materials. First, these materials focus on meaning(s), written form, spoken form, and frequency; however, they focus only partially on grammatical behavior and associations, and neglect collocations. Second, these materials promote passive recall, with the exception of introductory grammars that contain English to Hebrew exercises. Third, all vocabulary learning is promoted by primarily, if not exclusively, explicit processes.

3.4 Vocabulary Learning Strategies Presented to Learners

I will now continue by examining the VLSs presented to learners in BH introductory grammars and vocabulary specific materials. As has been the case throughout this chapter, it will be necessary to proceed by means of several generalizations due to the number of materials available. I will commence by using the same framework as in the previous two sections, examining introductory grammars first, and then vocabulary specific materials. The basis for this survey and evaluation will be the taxonomy of VLSs determined as potentially useful for beginning learners in Chapter 2.

3.4.1 Introductory Grammars

With regard to VLSs in introductory grammars, four generalizations can be made. First, many texts provide learners with little more than word lists, offering no suggestions for mastering them. Second, a number of introductory grammars present potentially useful VLSs to a small degree. Third, a number of texts include VLSs that were viewed as potentially problematic in Chapter 2. Fourth, a few texts include VLSs that were not included in the initial taxonomy examined in Chapter 2.

Among grammars that present little more than word lists are such texts as Weingreen (1959) and Vance (2004). Understandably, many texts that provide little more than word lists were written before the findings emerging from applied linguistics; however, even very recent texts do not include VLSs.

In these texts, vocabulary is not viewed as important in and of itself, but rather simply as a stepping stone to learning grammar. This viewpoint is quite clear in a quote from Weingreen (1959:viii):

I feel that while the student is engaged in the task of acquiring the essentials of grammar he should not be expected to accumulate an extensive vocabulary. Once he has gained a sound working knowledge of grammar and is ready to study a Biblical text in Hebrew, he can enlarge his stock of words by referring to a lexicon.

Thus, one would expect that in these types of texts, VLSs would not play a very important role.

There are quite a number of elementary grammars that do, however, present learners with VLSs noted as potentially useful in the previous chapter. Already, I have mentioned that Hostetter (2000) and Greenberg (1965) included a few exercises for building associations between words. Several of the other strategies that are encouraged in current introductory grammars are structured review (Finley & Isbell 1975; Futato 2003), intensive reading (Lasor 1978a; Lehmann, Raizen & Hewitt 1999; Isbell 2002; among others), using a computer program to practice words (Pratico & Van Pelt 2001), linking to L1 words with similar spelling (Bergman 2005), breaking lists into smaller parts (Mansoor 1978), and flashcards (Simon, Resnikoff & Motzkin 1992; Futato 2003). These examples may not exhaust the potentially useful strategies in current instructional materials; however, they should provide a representative sample.

Though the previous paragraph may make it appear that current BH grammars are doing an adequate job of including VLSs, this is almost certainly not true. In fact, there are three serious problems with the inclusion of potentially useful VLSs in these texts. First, the number of VLSs within individual texts is very limited, though this point may not be apparent from the list above. As an example, Mansoor (1978) includes the strategy of breaking lists into smaller parts, but this is the only strategy that he includes. Generally, texts include no more than one or two potential VLSs for learners. This lack of variety does not allow students to choose those that might better fit their learning styles, perhaps decreasing their motivation.

Second, though texts do include a few potentially useful VLSs, it is quite clear that several important types of strategies are virtually non-existent. As has already been mentioned, strategies involving implicit learning do not appear; motivational strategies are also generally not included. A few texts do claim to make the learning more enjoyable (Kittel, Hoffer & Wright 2005:xxiii; Lasor 1978a:3); however, many important types of motivational strategies are left out. For instance, most, if not all, texts fail to encourage students by keeping them updated on where they are in their vocabulary learning.

Third, a few of the potentially useful strategies are misused in introductory grammars. The primary strategy that is misused is linking with already known words. In the previous chapter, it was noted that associations should be built after an initial pairing of form and meaning in order to avoid the negative effects of interference (Nation 2001:303; see also section 1.1.1 for more references). In many of the introductory grammars, cognate words or semantically related words are introduced together, setting the learner up for encountering interference. As mentioned above, Bartelt (2000:viii)

seeks to introduce words by semantic fields. Kittel, Hoffer, and Wright (2005:xxiii) introduce cognate words together. Kelley (1992:315) presents words that are formally similar (*pe-nun* verbs) together. Though these texts do recognize the beneficial effects of association in general, this presentation of semantically related or formally similar words together could be problematic. Thus, though texts do present learners with potentially useful VLSs, there are still problems that remain.

Furthermore, introductory grammars include quite a number of strategies that were not viewed as particularly useful in the previous chapter. Specific instances of these VLSs would be: listening to a recording of vocabulary (Kittel, Hoffer & Wright 2005), using rhymes (Paine 1985), learning related topics at the same time (Bartelt 2000), and grouping words by grammatical class (Kelley 1992). The two primary problems relating to this group of strategies are interference and serial learning. Both of these problems could be eliminated by replacing these VLSs with using verbal repetition rather than recordings or rhymes, and including exercises for linking already known words later in the learning process rather than learning related topics at the same time or grouping by grammatical class.

Finally, there do appear to be two innovative VLSs in introductory grammars, one from Garrett (2002) and another from Hunter (1988), which do not appear in the taxonomy from Chapter 2.¹⁰ The innovative strategy in Garrett (2002) comes in the form of his “Learn the Verb” exercises.¹¹ These exercises seem as though they could have some potential for learning collocations; however, the exercises are only for verbs and do not cover the most frequent collocations in the Hebrew Bible. The innovative strategy in Hunter (1988) comes in the form of having students build their own glossary, which includes phrases in which the target words occur. The problems with this strategy are that it seems quite time consuming, and it might not give students enough possible meanings for the glosses. Though these strategies are innovative, when one considers their problems, it does not appear that they should be added to the taxonomy being used in the present study.

Summarizing, I have claimed that current grammars may include no strategies, include a few potentially useful strategies, include strategies previously eliminated, and/or include strategies not found in the taxonomy of Chapter 2. Particularly, when potentially useful strategies are presented they are usually very infrequent, often lacking important types of strategies, and sometimes misused. Against this background, I will next examine the current vocabulary specific materials from the viewpoint of the VLSs that they present.

¹⁰ Kittel, Hoffer, and Wright (2005:xviii) claim to include a number of new vocabulary exercises in their supplementary text. However, the exercises seem to be little more than more translational exercises.

¹¹ Garrett (2002:50) describes his “Learn the Verb” exercises as follows: “We tend to learn words in specific contexts; learning vocabulary through the memorization of lists of individual words is unnatural although it is sometimes a necessary evil. In this and similar exercises, you will be given a simple sentence for each verb in the above vocabulary list. The verb is associated with a word or phrase to which it might naturally be linked. By studying these short sentences you will be able to learn the meaning of verbs with some context rather than through rote memorization.”

3.4.2 Vocabulary Specific Materials

The analysis of the vocabulary specific materials in this section will be very similar to the examination of the introductory grammars. Much of what has been stated concerning the VLSs in introductory grammars can be said of the vocabulary specific materials as well. First, a number of materials present learners with VLSs that were recognized as potentially useful in Chapter 2 of the present study. Second, a number of texts present learners with VLSs not viewed as useful in Chapter 2.

With regard to materials that present learners with potentially useful strategies from Chapter 2, several representative strategies are: flashcards (Mitchel 1984; Dillard 1999; Van Pelt 2004), link to similar sounding L1 word (i.e., the keyword method; Landes 2001:xvii), relate words to oneself (Landes 2001), and oral repetition (Mitchel 1984:2–3). This list is not exhaustive, yet it should provide a representative sample. Though these materials do provide a number of VLSs, much of the criticism of the introductory grammars applies here. Particularly, individual materials do not present a wide variety of VLSs, a number of potentially useful strategies are absent, and a few potentially useful strategies are misused. With reference to individual materials not providing a wide variety of VLSs, Dillard (1999) and Van Pelt (2004) are representative examples. These two resources are pre-made sets of flashcards; therefore, the only strategy that learners are given to choose from is flashcards.

With respect to many important strategies being absent, this is clear from the fact that there are no motivational strategies and no strategies promoting implicit learning. For instance, none of the materials encourage learners to reward or congratulate themselves after mastering certain levels of vocabulary knowledge.¹² Likewise, none of the materials encourage learners to work with peers to determine which strategies they might find most beneficial. Furthermore, as has been previously mentioned, no extensive reading exercises are provided for acquiring the aspects of vocabulary knowledge more amenable to implicit learning.

As regards the misuse of strategies, the word frequency plus cognate approach as it appears in current materials is a good example (Harper 1890; Landes 2001; Van Pelt & Pratico 2003). Formally similar words are to be learned together, allowing for potential interference. An example of the potential for interference might be if students learned *בֵּית* (“seat, dwelling place”) and *בֵּיתֵי* (“resident alien, sojourner”) together (Landes 2001:49). Since the words differ only by their initial letter they might be easily confused. The interference could likely be avoided by having students arrange words by cognate after already having paired form and meaning. A second example of potentially misusing a strategy might be pre-made flashcards. It has already been determined that flashcards can be beneficial; however, the applied linguistics literature suggests that certain ways of using flashcards are more beneficial. Nation (2001:79) states, “Experimental evidence shows that simultaneous presentation of a word form and its meaning is best for the first encounter and, thereafter, delayed

¹² It is difficult to determine what exactly this would mean for each individual student. Even if one thinks only in terms of food or drink, one student may prefer to reward herself with chocolate, whereas another student may prefer to reward himself with coffee.

presentation is best because there is then the possibility of effort leading to successful recall.” Pre-made flashcards do not conform to this finding in that they do not present form and meaning together on the initial encounter. Rather, the first encounter involves delayed presentation. Thus, it appears that if students are going to use flashcards, they would be better off making their own, or seeing words in lists on first encounter.¹³

With regard to materials that present learners with VLSs not viewed as particularly useful in Chapter 2, there are four examples. Several of the older texts (Harper 1890; Watts 1960; Payne 1962) group words by grammatical class. Mitchel (1984:xvii) and Pennington (2003:3) encourage the use of written repetition, which was seen in the previous chapter as a potentially strong predictor of low overall language proficiency. Landes (2001:7–39) includes a lengthy section on word formation processes not likely suited for beginners. This is not to say that looking at word parts might not be beneficial for more advanced learners; however, the subject of the present study is beginners. Finally, Pennington (2003) promotes the use of word lists that have been recorded on an audio CD. This approach may inevitably lead to serial learning and to primacy and recency effects, since the lists are quite lengthy.

Summarizing sections 3.4.1 and 3.4.2: This overview and evaluation has painted a fairly uniform picture of the use of VLSs in current instructional materials. In general, VLSs are not presented extensively, with many potentially important strategies being absent and with a number of potentially useful strategies not being used effectively. Furthermore, a number of the materials present strategies not viewed as particularly useful in Chapter 2 of the present study. And finally, two introductory grammars included strategies not included in the taxonomy from the previous chapter.

3.5 Dobson and Davar

Moving on from what has been a quite negative discussion of current BH instructional materials, I will now discuss two exceptions, namely Dobson (2005) and the Davar BH vocabularies project (Bulkeley & Wall 2005d). These materials may not be significantly different concerning conceptions of vocabulary and vocabulary learning; however, they are much different with regard to VLSs. In the next two sub-sections, I will examine these two materials separately. The examination will follow the same general pattern as the previous sections: I will examine Dobson (2005) concerning conception of vocabulary, conception of vocabulary learning, and use of VLSs, followed by a like examination of Davar (Bulkeley & Wall 2005d).

3.5.1 Dobson

Before taking an in-depth look at vocabulary in Dobson’s (2005) text, it might first be beneficial to give background concerning its author and purpose. Dobson is a classical scholar who also has a

¹³ In the approach developed in the following chapter, the second option is followed. Flashcards are pre-made into a computer program; however, lexical items are also seen in lists on the first encounter.

background in modern languages (2005:ix). His intention is to enable learners “to read Biblical Hebrew, to understand its structure, to build a basic vocabulary, ... and to reflect on ways of translating Hebrew” (2005:xi). He appears to have no intention of introducing the learner to the more technical aspects of the language: “In this way confidence in reading Hebrew will be built up before more technical studies are undertaken” (2005:xi). Parunak notes that the text should not be considered a “grammar” in the normal sense of the term, “In fact, many details are deferred to the last 30 pages, which by their heading (“The Grammar of Biblical Hebrew”) imply that the rest of the book is not to be considered a grammar” (2001:135, a review of the first edition). Thus, considering the author’s background and intentions, this text can be expected to demonstrate some variation.

3.5.1.1 Conception of Vocabulary

Dobson’s (2005) perception of vocabulary remains primarily word-based, as illustrated by the following: “to build a basic vocabulary by reading *words* in meaningful passages ...” (2005:xi). “*Words* are most easily remembered when they are heard, spoken, sung, seen and read ... this course keeps using *words* in meaningful contexts, you do not need to try to learn lists of *words*. But there are things we can do to help fix our memory of *words* we have begun to know” (2005:24). The term *word* also appears in sections entitled “Helping the Memory” (e.g., 2005:72,88). Thus, Dobson’s understanding of vocabulary emerges as primarily word-based.

This word-based understanding of vocabulary, however, does not lead Dobson to exclude multi-word items to the extent that they are excluded in other introductory grammars. In fact, Dobson appears to include multi-word items more extensively than any other material, whether introductory grammar or vocabulary specific material. He includes multi-word items extensively, primarily by placing an entire chapter on idioms at the end of the text. This chapter on idioms extends over ten pages (2005:316–31), including sections such as idioms having to do with “body words” (2005:316–22). Problematically, however, two issues similar to issues found in other introductory grammars arise with respect to Dobson’s inclusion of multi-word items. First, he does not seem to present idioms as items that need to be committed to memory. In the following quotation, he refers to his section of idioms as “examples,” not necessarily as items to be passively recalled: “A proper survey of word usage and idioms in biblical Hebrew would need several books or a large dictionary. In this lesson we shall consider some *examples*, beginning with some common words for body parts and family relationships” (2005:316). Second, Dobson does not focus extensively on other important types of multi-word items, namely polywords, collocations, or sentence frames/heads. As an illustration, the title of Lesson 25 is “Idioms and Areas of Meaning,” but there is no other lesson containing anything similar to “polywords,” “collocations,” or “sentence frames” in the title. Thus, though Dobson does include multi-word items more extensively, and though he appears to recognize their importance more than other authors, there are still problems with regard to multi-word items in his text.

Concerning inflected words (including irregulars and semi-productives), it seems as though Dobson would have students learn them, though this is difficult to know for certain since he does not include

word lists in the typical sense.¹⁴ Several illustrations suggest that Dobson would have students learn inflected forms. First, Dobson states that one purpose of the games and activities is to “build vocabulary” (2005:xi). If inflected forms are included in the games and activities, then it might be assumed that Dobson would be encouraging the learning of individual inflected forms. Indeed, inflected forms do appear frequently in the games. For instance, the word searches in Lessons 14, 15, and 16 contain quite a number of inflected forms (2005:170,183,196). Second, in one of his sections on “Helping the Memory,” Dobson gives an explicit example that would require memorizing inflected forms. He instructs learners to augment memory by linking words in a narrative. Dobson’s example narrative is “he sat - he got up - he went there - he stood there - he returned from there - he came - he sat down” or in Hebrew “וַיֵּשֶׁב וַיִּקָּם וַיֵּלֶךְ שָׁמָּה וַיַּעֲמֵד שָׁם וַיֵּשֶׁב מִשָּׁם וַיָּבֹא וַיֵּשֶׁב” (2005:88). Thus, seven inflected forms would be learned in this example alone. So, it appears that Dobson does conform to the applied linguistics research with regard to irregulars and semi-productives, though not with regard to regularly inflected words.

Concerning derived forms, it also appears that Dobson would have students learn them. An illustration from another game activity may suffice. In one game, Dobson includes סֹפֵר (“scribe”) which is derived from כָּתַב (“he wrote”) (2005:87). Dobson conforms to the applied linguistics research in this way. Overall, Dobson seems to have a primarily word-based understanding of vocabulary, with multi-word items included to a certain degree, though perhaps not as vocabulary, inflected forms included, and derived forms included. In several ways, this text does not appear to be in line with the applied linguistics research.

3.5.1.2 Vocabulary Learning

The view of vocabulary learning in this study is that it involves acquiring a variety of aspects of word knowledge, learning the meaning of lexical items to the level of passive recall, and using both explicit learning and implicit learning. To a certain degree, Dobson’s understanding of vocabulary learning has emerged in the above quotations.

With respect to aspects of vocabulary knowledge, Dobson does appear to focus on meaning(s), written form, spoken form, and associations. However, he seems to focus only partially on grammatical behavior and not on frequency and collocation. The focus on form and meaning is clear from the activities, as the games and memory sections involve forms paired with meanings (e.g., 2005:170,183,196). There is a more explicit focus on spoken form since Dobson provides an accompanying sound recording. Dobson emphasizes associations by suggesting drawing pictures together with associated words, such as body parts (2005:140). Interestingly, activities that focus on

¹⁴ In the text, words do not appear in lists that should be committed to memory; however, words do end up in lists next to games, readings, etc. Furthermore, in practice, a strategy like linking words in a story, which Dobson promotes (2005:88), would seem like a variation of list learning.

building associations come later in the text, which conforms quite closely to the findings of the previous chapter.

With regard to grammatical behavior, Dobson appears to look more at the grammatical system of the language as a whole than at the grammatical behavior of particular words. This matter is made clear by the lesson titles in the table of contents (2005:vii-viii). Dobson deviates somewhat from the other texts in that he does not appear to compile vocabulary by frequency. For example, his game activities include infrequent words like שָׁרָה (“to be poor”) and מִשְׁתָּה (“gift”) (2005:48,71). Thus, frequency does not appear to be important to Dobson. And, concerning collocations, Dobson does not appear to explicitly focus on them, as none of the exercises seem geared toward learning them.¹⁵ Thus, Dobson focuses on form, meaning, and association, though neglecting aspects of frequency, grammatical behavior of words, and collocation.

With respect to level of knowledge, Dobson appears to encourage active recall. This does not conform to the findings of Laufer and Goldstein (2004:426), who propose that passive recall is the best predictor of overall language learning success. Exercises that make clear the push for active recall are those that have the student speak in BH (Dobson 2005:70; among others). This may encourage a level of learning beyond what is necessary for success in reading BH, though this cannot be known for certain (again, see section 1.2.2).

In concluding this section, Dobson unlike the other introductory texts, does appear to have activities that would promote implicit learning. These activities include the reading exercises in the early chapters.¹⁶ Although activities promoting implicit learning are included, these activities are not extensive enough to lead to significant implicit learning. As an illustration of this point, the audio CD that contains most of the readings for the entire course of the text is only about seventy-two minutes long.¹⁷ According to the above estimates for implicit learning, this amount of reading should be done at the very least over the course of about two weeks. The reason why Dobson may not include enough reading to promote implicit learning is his intention of making the lessons short and not requiring much homework (2005:ii).¹⁸ Thus, though this text does provide implicit learning activities, it does not provide enough text coverage to allow for significant implicit learning.

¹⁵ Some of the chunk-for-chunk reading in Dobson could be construed as a focus on learning collocation, but many of these readings are not taken from the Hebrew Bible. Therefore, many of the collocations are presented in artificial settings.

¹⁶ In the text’s appendix for teachers, it appears that Dobson (2005:375) specifically has implicit learning in mind in the section entitled “*LBH Contains an Audio CD.*”

¹⁷ Readings from Biblical passages are included later in the text; however, these readings are more form-focused as a great many unknown words have to be looked up in glosses.

¹⁸ Not making the lessons long, so that not much work outside of class needs to be done, may seem ideal to some; however, this seems somewhat unrealistic when one considers the amount of input often needed for learners to gain proficiency in other languages (Ellis 2003).

3.5.1.3 Vocabulary Learning Strategies Presented to Learners

Here is where the difference between Dobson's text and the other introductory texts is most glaring. Dobson (2005) includes VLSs quite extensively; specifically: reading, making up sentences, singing, pantomiming/gesturing, using physical action, building associations, using pictures, linking words in a story, learning words by topic, playing games, and enjoying learning. It is clear from this list that Dobson's text provides a wide variety of VLSs. Thus, the primary criticism levied against most introductory grammars does not apply to this text. Three more factors deserve attention with regard to Dobson's inclusion of VLSs, namely that many of the potentially useful strategies from the previous chapter are included, a number of strategies not viewed as useful in the previous chapter are included, and one strategy not appearing in the previous chapter is included.

Strategies that appeared useful in the previous chapter and that also occur in Dobson are reading, pantomiming/gesturing, using physical action, building associations, using pictures, and enjoying learning. Certainly there is a great deal of overlap. Perhaps one of the most important inclusions deals with the matter of enjoying learning. The text is full of encouragement for the student to enjoy the learning process. These encouragements sometimes come in the direct context of vocabulary learning. For example, in a section on how miming helps memory, Dobson states, "If your mime makes you smile or someone laugh, that's good. Smiles stimulate study and laughter lubricates learning" (2005:24). Other motivational strategies may not appear widely, yet the strong emphasis on enjoyment of vocabulary learning is a welcome addition. Despite these positives, strategies that would promote implicit learning are not very extensive. Though reading is stressed throughout the text, it is simply not extensive enough for implicit learning.

Though Dobson does use many strategies that appeared useful in the previous chapter, he also includes quite a number of strategies that were not viewed as particularly useful. These strategies consist of making up sentences, singing, linking words in a story, and learning words by topic. Singing and learning words by topic appear to be used only to a small degree. These strategies suffer from the problems of serial learning and interference respectively. Making up sentences appears quite frequently as students are asked to speak phrases or sentences in BH using different patterns (e.g., 2005:70). This strategy, as mentioned in Chapter 1, does not take seriously the view that communicative competence may not be a desirable goal for BH instruction (Van der Merwe 2002; Walker-Jones 2003:4-5; see also section 1.2.2). Linking words in a story is encouraged as a strategy for continued use (2005:88), but composition of a narrative in BH problematically implies communicative competence.

Finally, with respect to activities not included in the previous taxonomy, Dobson presents the strategy of using games. Indeed, it does appear that the use of games in learning vocabulary could be beneficial. Crookall and Oxford (1990) devote an entire monograph to the use of games in the language learning classroom, though their text deals with computer games. Nevertheless, although the applied linguistics literature supports the use of games, Dobson's games seem to contain problems, two of which have been mentioned already. First, in the text's vocabulary games, very

infrequent items sometimes receive attention. This does not appear very helpful. The beginning learner may lack the ability to distinguish what is most salient and attempt to commit the infrequent words to memory. Second, not only are infrequent words included, but also regularly inflected forms are included (2005:48). Thus, though games might be beneficial, it does not appear that games as they are used by Dobson would be very beneficial.¹⁹

3.5.1.4 Overall Assessment

Before discussing the Davar BH vocabularies project (Bulkeley & Wall 2005d), I would like to give a very brief overall assessment of Dobson's text. From the above evaluation, one might get a primarily negative view. This may have something to do with the nature of the present study. First, I am dealing with the area of vocabulary learning; therefore, the evaluation says nothing of the positive elements of the text for other areas of learning. Second, I am attempting to show the need for a new model for learning BH vocabulary; thus, I must consistently point out where there are problems in current materials. This aim may problematically obscure the fact that Dobson's text is likely a step in the right direction. Dobson's text is perhaps the first that takes seriously the idea that major changes need to be made in BH pedagogy. As Van der Merwe states (2002; see the quotation in the introduction to this chapter), most new texts present only partial solutions. Dobson is perhaps the first to make more than partial adjustments and present more holistic changes to BH instruction.

3.5.2 Davar

While Dobson (2005) is an exception among authors of introductory grammars, the Davar Biblical Hebrew Vocabularies project (=Davar) is an exception in the realm of vocabulary specific materials. Davar was developed at the University of Auckland by a "project team consisting of staff from its School of Theology and the Centre for Flexible and Distance Learning" (Bulkeley & Wall 2005b).²⁰

The project has three general aims, as stated on its website (Bulkeley & Wall 2005a):

Davar's original aim was to provide a multimedia environment to help students at the University of Auckland to grasp the many unfamiliar complexities of Biblical Hebrew ... A second aim was to build

¹⁹ One might consider at this point adding the use of games to the taxonomy of VLSs for this study. However, Dobson's text seems to be the only one that provides a repository of vocabulary learning games. And since these games have particular problems, it would not seem beneficial at this point to add using games to the present taxonomy. Although it would be possible to develop appropriate vocabulary games, that is outside of the scope of this study.

²⁰ The team is as follows:

Academic Lead: Dr. Tim Bulkeley, Dr. Lynne Wall
Multimedia Learning Design/Coordination: Liz Ramsay
Learning Design: Cathy Kell
Web Development and Design: Wen-Chen Hol, Craig Housley
Graphic Design: Jamie Nuku
Hebrew Speakers: Tim Bulkeley, Diamond Hochman (2005b)

in the flexibility to allow vocabularies to be customized so that they could be used with different textbooks or lesson objectives ... Thirdly, as the Biblical Hebrew scholarly community is not large and is spread throughout the world, we wanted to provide a dynamic resource, whereby academics could collaborate to extend and edit the vocabulary.

All the project's aims are not pertinent to the present study; therefore, this examination will deal only with the first one. I will commence by evaluating the project with respect to its conception of vocabulary, conception of vocabulary learning, and use of VLSs.

3.5.2.1 *Conception of Vocabulary*

Davar manifests a clearly word-based understanding of vocabulary. The following quotations are illustrative: "The individual *word* pages form the core of Davar. These open in new windows and can be paged forwards or backwards from one *word* to the next ..." (Bulkeley & Wall 2005c). Particular headings on the design rationale page are "The *word* in context," "Seeing the *word*," and "Hearing the *word*" (Bulkeley & Wall 2005c).

Further, multi-word items and inflected words (including irregulars and semi-productives) are excluded, and derived words are included. These points should all be clear by a cursory look through the word lists. With respect to multi-word items, the presentation of words in authentic contexts might be construed as a focus on collocation; however, many of the authentic contexts do not seem to be the most frequent collocations in the Hebrew Bible. In addition, the presentation of words in authentic contexts does not appear to be viewed as important in and of itself, but as help for learning phrase structure as a whole: "The inclusion of a Hebrew phrase helps to accustom the student to differentiating between the word in context, as the structure of Hebrew sentences and phrases can present difficulties" (Bulkeley & Wall 2005c).²¹ I am aware of no inflected forms, whether regular, irregular, or semi-productive in the lists, though they do occur on the word pages. This would be similar to including inflected forms in glosses. An example of the occurrence of a derived form is בִּרְכָה ("blessing") from בָּרַךְ ("he blessed") (Bulkeley & Wall 2005d). Thus, the understanding of vocabulary in Davar is not significantly different from that of the other vocabulary materials examined.

3.5.2.2 *Conception of Vocabulary Learning*

In this area, Davar does not differ greatly from the other current materials. Davar maintains a focus on meaning(s), written form, spoken form, associations, and frequency; however, grammatical behavior is treated only partially, and collocations are neglected. The focus on meaning(s), written form, and spoken form is apparent from the fact that forms and meanings are paired on word pages.

²¹ Interestingly, this purpose for presenting genuine phrases appears to be the opposite of learning collocation. Here, the goal is for students to extract individual words, whereas the goal of learning collocations would be for the learner to understand them without having to focus on the individual parts.

Interestingly, written form receives explicit attention when the learner is allowed to see the word as it would be written out (Bulkeley & Wall 2005c). For spoken form, the learner can click on the word to hear it pronounced (Bulkeley & Wall 2005c). Associations emerge when synonyms and semantically related words appear on the word pages, and learners are allowed to sort them into semantic categories and cognates in order to learn the words in groups (Bulkeley & Wall 2005c). Frequency receives attention, since students are able to sort by frequency in order to learn words (Bulkeley & Wall 2005e).

Grammatical information, such as part of speech, is listed for the words. As far as the grammatical behavior of words, no exercises or readings focus on it. In addition, collocation is neglected in much the same way. No exercises are included for learning them, authentic contexts often do not come from frequent collocations, and readings are not included for learning them. Thus, Davar is similar to many of the other vocabulary materials, with the exception that Davar does focus more on association. In accordance with the applied linguistics literature, Davar does appear to encourage the passive recall of words. In commenting on keywords, Wall states that the goal is to have words “stick in student’s minds” (Bulkeley & Wall 2005f). Still, the processes that are encouraged for learning vocabulary clearly are primarily, if not exclusively, explicit. As with other vocabulary specific materials, no mechanism (e.g., extensive reading for meaning) is included to foster implicit learning. Thus, Davar mirrors the other vocabulary materials very closely with respect to conception of vocabulary learning.

3.5.2.3 Vocabulary Learning Strategies Presented to Learners

As with Dobson (2005), this is the area in which Davar appears most different from the other vocabulary specific materials. Davar offers students a wide variety of VLSs. This may be due to Wall’s desire to “cater for the variety of learning styles present in any class” (Bulkeley & Wall 2005f). Among the VLSs offered to students are using a computer to practice words, using pictures, linking with L2 words with similar sounds, verbally repeating, linking with already known words, seeing words written out, and using authentic contexts. With respect to the findings of the previous chapter, a number of potentially helpful VLSs are presented, no VLSs viewed negatively are presented, and two VLSs not listed in the previous taxonomy are presented.

It is clear from this list that infrequency of potentially useful VLSs is not a significant problem with Davar. However, there do seem to be problems with how several of the strategies are used and with the types of strategies that are not included. Strategies with problematic usage in Davar are using a computer to practice words, linking with already known words, and using pictures. The following critique primarily has to do with the use of “word pages.” Word pages appear very similar to flashcards, and Wall actually compares them to flashcards (Bulkeley & Wall 2005f). In fact, the word pages look like the backs of flashcards. Thus, many applied linguistics suggestions about flashcards can be used to evaluate these word pages. Two problems emerge for these pages in light of research on flashcards. First, they do not encourage retrieval of meanings. Learners can automatically see both the word’s form and meaning; therefore, they are not encouraged to retrieve the meaning. A

second criticism has to do with the fact that the flashcards look cluttered. Concerning flashcards, Nation (2001:305) states, “*Keep the cards simple.* Other kinds of information — collocates, etymology, constraints, grammatical pattern — could be put on the word card, but it is best to see word cards as only one step in the cumulative process of learning a word and not expect too much from this strategy alone.” Thus, the Davar project could benefit from less information for some words. For instance, rather than giving a separate entry for parsing, the part of speech could simply be color-coded into the presentation of the word (see Chapter 2 of the present study).

Linking with already known words also seems as though it might be misused. As with the other vocabulary specific materials, this strategy is potentially misused by encouraging the learning of associations too early in the learning process. Users are given the option of learning words by semantic domain or by root word. Also, on first encounter, learners may look at the synonym and semantic information on the word pages. Once again, interference is a potential problem (see section 1.1.1 for references).

Using pictures may also be misused due to the salience of the pictures on the word pages. The design rationale states, “The image signified by the word is dominant on the page” (Bulkeley & Wall 2005c). This may not allow for the catering to a “variety of learning styles” desired by Wall (Bulkeley & Wall 2000f). It appears that a visual learning style would be most emphasized. Further, Nation (2001:304) sees the L1 translation and visual representation as equally important. Therefore, there is no reason to make the visual representation more salient than the L1 translation. This misuse may not be as problematic as the others and would only require minor adjustment.

Beyond the issue of a few strategies being misused, another problem is the absence of motivational strategies and strategies fostering implicit learning. Granted, the use of a computer could be a motivational factor in and of itself; however, the project could find some other way to incorporate motivational strategies. No readings are included to foster implicit learning. This absence is probably because the project is intended to be worked into existing BH courses: “A second aim was to build in the flexibility to allow vocabularies to be customized so that they could be used with different textbooks or lesson objectives” (Bulkeley & Wall 2005a).

Despite these problems, the program does present two innovative strategies not included in the taxonomy from the previous chapter. First, learners are allowed to see how the word would be written out (Bulkeley & Wall 2005c). This does not seem to be the same as written repetition because the learner is not writing the word and its meaning over and over. The purpose of this strategy is for learners to become accustomed to the language moving from right to left (Bulkeley & Wall 2005c). This strategy is innovative; however, it does not seem very beneficial. As has been mentioned, orthography is better learned through implicit processes (Ellis 1994:239); therefore, simply having students read a great deal of BH would seem to be better for learning the right to left movement. Second, learners see genuine contexts containing the words (Bulkeley & Wall 2005c). This strategy does appear beneficial; however, these contexts are not taken from the most frequent usages in the Hebrew Bible. In the present study, the use of genuine contexts will be subsumed under the use of

flashcards, yet, unlike the contexts in Davar, those used in this study will be from the most frequent in the Hebrew Bible. Furthermore, in this study, seeing words in genuine contexts will also be subsumed under very large amounts of reading.

3.6 Conclusions

As a result of the findings of the previous chapter, I have viewed BH instructional materials in primarily a negative light. BH instructional materials have continued to promote misperceptions of vocabulary and vocabulary learning. Further, these materials have not included an extensive number of VLSs to help learners master the necessary vocabulary. Two exceptions to these criticisms are Dobson (2005) and the Davar BH vocabularies project (Bulkeley & Wall 2005d); however, even these materials contain problems. Thus, the need for a new model of vocabulary learning for students of BH seems confirmed. Current approaches can be improved upon by moving away from a word-based understanding of vocabulary, by taking a broader view of vocabulary learning — especially one that allows for implicit processes — and by extensively including VLSs that appear useful, using them in a proper manner, and excluding those that do not appear useful. This will be the subject matter of the next chapter.

4. Developing a New Approach to Biblical Hebrew Vocabulary Learning Using Vocabulary Learning Strategies

4.1 Introduction

The previous two chapters of this study focused, respectively, on the question of what an adequate approach to BH vocabulary learning should look like, and, against this background, the shortcomings of current approaches. The present chapter will consist of applying the insights from the previous two chapters concerning what vocabulary is, what it means to learn it, and how it is best learned. In other words, this chapter will focus on determining which items should be learned, developing exercises to focus on each aspect of knowledge about the items, and developing exercises that make use of VLSs that have been shown to be potentially beneficial.

4.2 Determining Which Items to Learn

In this section, I will first determine how many items should be learned and then exactly which items these should be. These decisions will require proposing learner goals and determining how many items would be needed to meet these goals. As stated in section 1.1.3, the proposals concerning goals are not meant to be definitive, due to the nature of this study and the desire to restrict it primarily to the matter of vocabulary. Anything more will be a matter for future research; however, once these determinations have been made, attention will be given to the types of items that have to be learned, namely individual words, semi-productives, irregulars, and multi-word items.

4.2.1 Number of Items to be Learned

In most BH instructional materials, the number of vocabulary items varies greatly. This variation stems from a failure to define learner goals adequately and from basing determinations concerning necessary vocabulary amounts on the author's intuitions. For example, consider the statements concerning learner goals and vocabulary from Simon, Motzkin, and Resnikoff: "The goal of the *Primer* is to teach students to read and understand Biblical Hebrew as quickly as possible ..." (1992:vii). In addition, "By the end of the *Primer*, you will have learned most words that occur two hundred or more times in the Bible. This controlled vocabulary should make the transition to reading biblical text as easy as possible" (1992:vii). These statements assume ill-defined goals and the amount of vocabulary in the text is, moreover, arbitrary, as will be made clear below.

The apparent goal of the text is to enable learners to "read" BH; however, what is meant by "read" BH? Does the text assume that the learner will be able to read any portion of the Hebrew Bible? Or, after the introduction, will they perhaps only be expected to read narrative? In addition, does the text assume that learners will be able to "read" in the fullest sense of the term, as it is used in the applied linguistics literature? More specifically, will learners be able to use top-down processes in reading, e.g., skimming for overall meaning or using schema to predict what will come next in a passage

(Nuttall 1996)? Since the statements are not specific, one is left to assume that the authors believe learners will be able to read any portion of the Hebrew Bible in the fullest sense. If one proceeds with this assumption, it is quite clear that the amount of vocabulary supplied is arbitrary and, in fact, a significant miscalculation.

Several facts point to such a miscalculation. First, in order for anyone to read (in the fullest sense of the term) with adequate comprehension, they must have a 95% text coverage for a given passage (Laufer 1997a). In other words, they must know 19 out of every 20 words. Second, for only the Samuel and Kings material, one would need a vocabulary of 599 words (not including proper nouns, multi-word items, irregulars, or semi-productives) in order to have a 95% text coverage. Of course, the text coverage for the entire Hebrew Bible would be significantly higher. Third, the number of words occurring in the Simon, Motzkin, and Resnikoff (1992) text is 333. Therefore, learners using the text would not be able to read (in the fullest sense of the term) a text from 1 Samuel through 2 Kings, much less a passage from anywhere else in the Hebrew Bible. The amount of vocabulary is clearly a miscalculation for the goals that are stated. A more appropriate statement of goals might be that after using the text learners should be able to “bottom-up process” passages of the Hebrew Bible; however, they will certainly not be able to read them.¹ These criticisms apply to the vast majority of introductory BH materials; namely, goals are not well-defined and estimates of vocabulary needs are arbitrary and/or miscalculated.

Against this backdrop, it is necessary to take student goals into consideration and to make calculations in light of them. For the purposes of the present study, Van der Merwe’s (2002) suggestions concerning goals for learning BH will provide an adequate framework, though some modifications will be suggested (see also section 1.1.3 for the reasoning for adopting these goals in this study). Van der Merwe (2002) proposes the following as realistic goals for BH instruction:

1. Read with understanding *a simple* BH narrative text with the help of a *comprehensive* reading guide and a BH lexicon. “Reading with understanding” implies the ability to explain the development of the act of secondary communication represented by the Biblical Hebrew text in the light of the grammatical and lexical choices of the author in the cultural context and the co-text in which a specific act of communication took place.
2. Read with understanding a BH prose or poetic text with the help of a reading guide, a BH lexicon, a BH reference grammar, and an electronic library (e.g., LOGOS). Engage critically with existing translations and identify BH constructions that, according to the resources at your disposal, were not translated adequately. Suggest solutions in terms of the resources at your disposal.

¹ Bottom-up processing refers to the ability of the learner to understand a passage as the sum of its parts, i.e., working through a passage word-for-word, phrase-for-phrase, sentence-for-sentence (Nuttall 1996:16-17).

3. Read with understanding a BH prose or poetic text *in terms of an explicitly defined exegetical frame of reference* with the help of a BH lexicon, a BH reference grammar, and an electronic library (e.g., LOGOS). Engage critically with existing translations *and commentaries*, identify BH constructions that, according to the resources at your disposal, were not translated or interpreted adequately. *While maintaining a critical stance from them*, suggest solutions in terms of the resources at your disposal.

Below I will propose modifying these suggestions by making the terminology more specific and by stating one additional goal.

First, the term “read” must be made more specific. Keep in mind that to genuinely read would involve the learner having 95% text coverage. To gain this type of coverage for the entirety of the Hebrew Bible would not be a reasonable goal for an initial four-course sequence (each course lasting one semester), since it would require learning well over 2,000 lexical items. Furthermore, when one considers the complexities of learning a new script and a grammar that is significantly different from the L1 of most learners, even expecting learners to be able to genuinely read narrative in general seems unreasonable. This would likely require learning well over 1,000 lexical items. As a result, in the goals of Van der Merwe (2002), I propose changing the term “read” to “bottom-up process.” Bottom-up processing refers to the ability to work through a passage word-by-word, phrase-by-phrase, sentence-by-sentence, etc. (Nuttall 1996:16–17). Considering the limited time available in a four-course sequence, expecting learners to be able to bottom-up process texts of the Hebrew Bible seems reasonable, especially in light of software tools that are available.

In view of this change, it is appropriate to propose one additional goal for BH instruction. It might appear from the above discussion that I have eliminated reading as a goal, yet, I propose to incorporate genuine reading after the first three goals in Van der Merwe’s (2002) sequence. The question remains how genuine reading can be incorporated, since I have already stated that even reading narrative in general would require learning over 1,000 lexical items. The answer to this question is to teach the vocabulary of a limited corpus. Having investigated the matter through a trial-and-error process, I propose that learners focus on the vocabulary that would give a 95% text coverage for the Book of Joshua.² Joshua has a highly controlled vocabulary and would require learning only 319 individual words, along with their respective semi-productives, irregulars, and multi-word items. In actual fact, I will propose a 335-word list below. This list would require

² There is no way to guarantee that Joshua is the best corpus to choose. I made this decision after investigating the number of vocabulary items necessary to give the appropriate text coverage for a number of the books of the Hebrew Bible. The number of items necessary for Joshua seems reasonable; however, I am aware that Joshua also presents several difficult theological issues and contains some sections that are not very interesting. Yet I believe that these difficult theological issues might be a matter of interest for learners, at least they are for me personally. I also believe that, though some sections of Joshua might not be interesting, there are *enough* interesting sections.

learners to acquire only 84 words (with their respective additional items) each semester in a four-course sequence.³

At this point, it is necessary to attend to one potential objection. Proponents of a word frequency approach might object that the most frequent items in the Hebrew Bible will not be learned first; therefore, learners will not be able to make the transition to other books beyond Joshua. I will address this issue in several ways. First, in light of the availability of hypertext versions of the Hebrew Bible, learning the vocabulary from Joshua should still provide the learner with enough text coverage to bottom-up process passages from other Biblical books. The vocabulary from Joshua provides over 85% text coverage for narrative and 78% text coverage for the entirety of the Hebrew Bible. Using hypertext, the learner then has access to any unknown words immediately. Thus, the failure to focus on the most frequent words in the Hebrew Bible should not negatively affect learners when moving on to other Biblical texts outside of Joshua.⁴

Second, part of the objection of the proponents of a word frequency approach might follow from a misunderstanding of the term “read.” If reading is equated with bottom-up processing, then a strict word frequency approach would be better. However, if reading involves both bottom-up and top-down processes and requires a text coverage of 95%, then a strict word frequency approach is not best (Nuttall 1996; Laufer 1997a). This point requires further illustration. In the approach I am suggesting, learners should be able to read Joshua with adequate comprehension after learning only 335 words. However, in a strict word frequency approach, a learner would not be able to genuinely read Joshua after learning 335 words. This is due to the fact that the 335 most frequent words in Joshua are not the 335 most frequent words in the rest of the Hebrew Bible. To make this point clearer, after using the approach I am suggesting, a learner ought to be able to genuinely read (i.e., will have 95% text coverage for) 12,371 words of text (the number of words other than proper nouns in Joshua), whereas a learner using a strict word frequency approach would not be able to genuinely read nearly this much text in general.

Third and finally, it can be noted that inductive approaches already emphasize the vocabulary of a limited corpus. Of course, this precedent does not necessarily add to the merit of the approach that I propose; however, in conjunction with the previous two considerations, it does suggest that others may not be satisfied with a strict word frequency approach for whatever reason. As an example, Isbell

³ The additional items (semi-productives, irregulars, and multi-word items) will not significantly add to the learning burden since these items will be introduced toward the end of the process. This means that before the additional items are learned, learners will already have acquired the base forms of the semi-productives and irregulars along with the component parts of the multi-word items.

⁴ In fact, not focusing on the most frequent vocabulary items in the Hebrew Bible might actually be advantageous to learners once they begin bottom-up processing of texts using hypertext. This seems paradoxical; however, the fact is that in using hypertext, the learners will be looking up some of the more frequent words as they are bottom-up processing. Since they will see these words often using hypertext, they may learn the frequent items anyway, simply by looking them up and encountering them in genuine contexts. On the other hand, if learners were looking up only the less frequent words, they would not likely learn these less frequent items simply by looking them up and encountering them by virtue of the fact that they simply will not see them as often.

(2002) begins with the book of Jonah, and learners focus on the vocabulary of Jonah as they move through the text. Therefore, the approach I am suggesting would not be alone in abandoning a strict word frequency method. In light of these considerations, I believe that using the vocabulary from a smaller corpus is not only a valid approach, but a better approach than a strict word frequency approach.⁵

Against this background and based on the proposals made by Van der Merwe (2002), the overarching goals that will be adopted for this study are as follows:

1. Bottom-up process *a simple* BH narrative text with the help of a *comprehensive* reading guide and a BH lexicon. “Bottom-up process” implies the ability to explain the development of the act of secondary communication represented by the Biblical Hebrew text in the light of the grammatical and lexical choices of the author in the cultural context and the co-text in which a specific act of communication took place.
2. Bottom-up process a BH prose or poetic text with the help of a reading guide, a BH lexicon, a BH reference grammar and an electronic library (e.g., LOGOS). Engage critically with existing translations, and identify BH constructions that, according to the resources at your disposal, were not translated adequately. Suggest solutions in terms of the resources at your disposal.
3. Bottom-up process a BH prose or poetic text *in terms of an explicitly defined exegetical frame of reference* with the help of a BH lexicon, a BH reference grammar and an electronic library (e.g., LOGOS). Engage critically with existing translations *and commentaries*, and identify BH constructions that, according to the resources at your disposal, were not translated or interpreted adequately. *While maintaining a critical stance from them*, suggest solutions in terms of the resources at your disposal.
4. Genuinely read any given passage in the Book of Joshua. “Genuinely read” implies the ability to use both bottom-up and top-down processes to understand the meaning of a text.

With these goals determined for BH instruction, it is now necessary to suggest how to distribute them over a four-course sequence of one-semester courses. In terms of bottom-up processing and reading, I will assume that during the first and second courses learners will not be doing any processing of text. When continuing in a third course, I will assume that learners will begin to bottom-up process narrative, prose and poetic texts (i.e., goals 2 and 3). Finally, for a fourth course, I will assume that learners will begin to bottom-up process prose and poetic texts in terms of an explicitly defined exegetical frame of reference (i.e., goal number 3) and begin genuinely reading narratives from Joshua (i.e., goal number 4).

⁵ The concept of word frequency will be worked into the vocabulary list proposed below, but strict word frequency will not guide the overall list.

4.2.2 Vocabulary Lists

The three subsections to follow all adhere to the same format. In each subsection, I will describe the procedure behind developing a list of items, followed by supplying the resulting list. For example, the first subsection will describe the procedure for developing the list of individual words followed by the list of individual words. The second and third subsections will focus on semi-productives and irregulars, and multi-word items respectively. I will give only the lists for an initial first-semester course in BH. This is due to the amount of time delimited for testing in the proposal for this study.

4.2.2.1 Individual Words

As stated above, the individual words will be taken from the Book of Joshua; however, the list will not simply be a frequency list. First, this is due to the fact that genuine reading of Joshua is the last goal stated above. Therefore, this list should be compiled by arranging the most frequent words in Joshua, according to their frequency in the overall text of the Hebrew Bible. Since genuine reading of Joshua is not expected until after the entire list is mastered, meeting the fourth goal is not affected by the order of the words. To state this another way, learners would have a 95% text coverage even if they learned the most frequent words in Joshua in ascending order.

Second, this list will not simply be a frequency list from Joshua, due to the fact that some learners will want to progress to reading other books of the Hebrew Bible. I will assume that some learners will next want to be able to read narrative in general. In order to have a 95% text coverage for narrative, learners would need to know roughly all words occurring 17 times or more in narrative.⁶ Therefore, I have eliminated from the Joshua list any words that do not occur 17 times or more in narrative. Before removing words, the Joshua list contained 319 words; however, to compensate for removing them, some less frequent words from Joshua that are frequent in the entirety of the Hebrew Bible were added to regain a 95% text coverage for the Book of Joshua. The resulting list contains 335 words. The following list consists of only the 84 words necessary for the first-semester course⁷:

Table 6. Individual Words for First-Semester Course in BH

1	וְ = and	29	וָלַךְ = he walked	57	עֶבֶד = servant, slave
2	הַ = the	30	דְּבַר = word, speech	58	אֵין = nothing, is not
3	לְ = to	31	הוּא = he, it	59	אִשָּׁה = woman, wife

⁶ This number was derived from a search of the Hebrew Bible using Accordance Bible Software.

⁷ These words are generally presented with only one or two translation values. These translation values represent the most common ones for these words as they appear in the entirety of the Hebrew Bible. I had a difficult time deciding how to present the middle weak verbs; however, I decided to present them as vocalized infinitive forms, primarily to set them apart as *different* in order to prepare for them being treated as semi-productives later. I also considered presenting them in 3ms forms similar to the other verbs.

4	בְּ = in, at, with	32	רָאָה = he saw	60	שְׁנַיִם = two
5	אֶת = (direct object)	33	עַד = until, as far as	61	גַּם = also
6	מִן = from	34	אָב = father	62	נַפְשׁוֹ = inner self
7	עַל = upon, over, above	35	זֶה = this (m)	63	כֹּהֵן = priest
8	אֶל = to, toward	36	שָׁמַע = he heard	64	אַתָּה = you (m. sing.)
9	אֲשֶׁר = which	37	דִּבֶּר = he spoke	65	אֵלֶּה = these
10	כָּל = all	38	יָשַׁב = he sat, dwelt	66	כֵּן = so, thus
11	אָמַר = he said	39	עִיר = city	67	קָרָא = he called
12	לֹא = not, Lo	40	יָצָא = he went out	68	אֵל = no, not
13	בֶּן = son	41	שׁוּב = to return	69	אֶחָד = one (m)
14	כִּי = for, that, because, when	42	אִם = if	70	דֶּרֶךְ = way
15	הָיָה = he was	43	הִנֵּה = look, here is	71	הֲ = (interrogative)
16	כְּ = as, like	44	עִם = with	72	נָשָׂא = he lifted, carried, took
17	עָשָׂה = he did, made	45	לָקַח = he took	73	אָח = brother
18	אֱלֹהִים = God	46	יָדַע = he knew	74	קוּם = to arise, stand
19	בּוֹא = to come	47	עָלָה = he went up	75	אַחֲרַי = after
20	מֶלֶךְ = king	48	עַיִן = eye, spring, Ain	76	זֹאת = this (f.)
21	אֶרֶץ = land, earth	49	אִתּוֹ = with	77	רֹאשׁ = head
22	יוֹם = day	50	שָׁנָה = year	78	שָׂם = to put, set
23	אִישׁ = man	51	אֲנִי = I	79	בַּת = daughter
24	פָּנָה = face	52	שֵׁם = name	80	מַיִם = water

25	בֵּית = house	53	שָׁלַח = he sent	81	מֵאָה = hundred
26	נָתַן = he put, set, gave	54	מוֹת = to die	82	כֵּן = thus, here
27	עַם = people	55	שָׁם = there	83	מָה = what?
28	יָד = hand	56	אָכַל = he ate	84	הֵם = they (m.)

4.2.2.2 Semi-Productives and Irregulars

There is no direct correlation between English and BH with regard to semi-productives. English semi-productives are items like *drank* as the past tense of *drink*. In BH, there are too many words that undergo vowel changes to consider these types of words only “semi-productive.” Furthermore, what distinguishes semi-productives from regulars in English is the lack of a regular inflectional ending, such as *-ed*. There are no BH items that lack regular inflectional endings, such as *לָקַח*-. Therefore, some criterion must be established for determining what I will consider semi-productives in BH. One procedure is to ask what parts of a root word are “most essential” for word recognition. Schmitt (2001:46) suggests that adult English learners primarily use the first two letters in order to recognize a word.⁸ If this suggestion is used as a criterion for semi-productives in BH, then words that differ from their base form in the initial two letters (e.g., verbs that lose their initial root letter, such as *לָקַח* (“he walked”) and hollow verbs, such as *בָּוֹא* (“to come”) should be considered semi-productive. Words that lose their final root letter like *עָשָׂה* (“to do”) are then not considered semi-productive, since they should contain enough information to be associated with their root.

With regard to irregulars (e.g., English items like *went* as the past tense of *go*), there are similar means for identifying these in English and BH. Irregulars are items that are not formed by inflection of a root word. For instance, *אֲנָשִׁים* (“men”), the plural of *אִישׁ* (“man”), is formed on the basis of *אִישׁ* (“man”). Therefore, semi-productives will be items that differ from their base form in the initial two letters, and irregulars will be items that have inflections formed on the basis of words other than their roots. The semi-productives and irregulars for this study are the following:

⁸ Interestingly, this criterion might be valid for calling items like *drank* semi-productives in English if one considers *dr* as one item (i.e., a consonantal cluster). The initial two items in *drank* (*dr-a*) and *drink* (*dr-i*) are then different.

Table 7. Semi-Productive and Irregular Forms for First-Semester Course in BH

בֹּא = to come	יוֹם = day	אִישׁ = man	בַּיִת = house
נָתַן = he gave, put, set	הִלֵּךְ = he walked	יָשַׁב = he sat , dwelt	עִיר = city
יָצָא = he went out	שׁוּב = to return	לָקַח = he took	יָדַע = he knew
מוֹת = to die	אִשָּׁה = woman, wife	נָשָׂא = he lifted, carried, took	קוּם = to arise, stand
שָׂם = to put, set	בַּת = daughter		

These items will be presented by displaying how the base form will look after its respective changes. For instance, בֹּא will be presented as “בֹּא remaining in the base form = ‘to come’ from בֹּא.” These items will also be presented with the most frequent forms that result from the changes.

4.2.2.3 Multi-Word Items

Concerning multi-word items, Church and Hanks (1990) provide a statistical procedure for determining which words are associated with one another in terms of making up a multi-word item. They take this procedure from Fano (1961), who has stated that the mutual information of two items can be determined with the following equation:

$$I(x,y) \equiv \log_2 \frac{P(x,y)}{P(x) P(y)}$$

In this equation, ‘ $I(x, y)$ ’ represents the mutual information shared between x and y . $P(x, y)$ represents the probability of x and y occurring together. In this study, as with Church and Hanks (1990), $P(x, y)$ will be calculated as the probability of two items occurring together within a span of five items. $P(x) P(y)$ represents the probability of x occurring alone multiplied by the probability of y occurring alone. Church and Hanks suggest that a calculation of $I(x, y)$ higher than three means that there is an interesting association between x and y . The equation was used in this study; however, two steps were necessary to produce an accurate outcome.

First, the equation was used to determine which items in Joshua have a high degree of mutual information. This would appear to be the only step necessary; however, there is a problem with using this step alone. Since the Book of Joshua does not contain a large quantity of words, the procedure produces a significant number of “false alarms.” In other words, it gives a high degree of mutual

information for words that do not appear to form multi-word items. Therefore, as a second step, the items with high mutual information in Joshua were searched in the entire text of the Hebrew Bible, and the equation was applied once again. Some of the items with high mutual information in Joshua were shown not to have high mutual information in the larger corpus. This allowed the false alarms to be eliminated. Finally, a subjective element had to be introduced. After the second step, there were still a number of items that appeared “uninteresting.”⁹ Thus, after the second step, it was still necessary to examine the items and eliminate those that did not appear interesting. I have been fairly conservative in not eliminating items that have high mutual information but do not appear interesting. The reasoning for this is that even if some of the remaining items are not interesting, they can still help to speed up reading. Speeding up reading in turn leads to better comprehension. With this process in mind, the following is the list of multi-word items for this study¹⁰:

Table 8. Multi-Word Items for a First-Semester Course in BH (Preliminary)¹¹

Compounds	Phrasal verbs	Idioms	Fixed phrases
אלֹהִים + אָב	אָמַר + אֵל	לְ + פְּנֵה	לְ + מָה
בַּיִת + אָב	דִּבֶּר + אֵל	בְּ + עֵינַי	אָמַר + מָה
כָּל + נַפְשׁוֹ	קָרָא + אֵל	מִן + פְּנֵה	הָ + לֹא
כָּל + עַם	הָיָה + אַחֲרָי	בְּ + יָד	בְּ + יוֹם
כָּל + אֶרֶץ	הָיָה + בְּ	בֵּן + שָׁנָה	יוֹם + יוֹם
כָּל + דִּבְרָר	עָשָׂה + בֵּן	נָתַן + יָד	הָיָה + יוֹם
	עָשָׂה + בְּ	הִלְךְ + דֶּרֶךְ	אַחֲרָי + הִלְךְ

⁹ It is difficult to define what is meant by “appear uninteresting”; however, an example will help to illustrate. The two lexical items וְ and הֵן occur together frequently and have a high degree of mutual information. Yet this combination simply means “and the,” which is highly compositional and can likely be understood even if only the two individual items are learned.

¹⁰ For the classification, I have used the categories of Moon (1997:44); however, it must be noted that the classification of these items is subjective. Further, an additional difficulty stems from the generality of some of the titles, such as “fixed phrases.” In a way, all of these items are “fixed” to some degree, since one of the characteristics of multi-word items is “fixedness.” Thus, items like לְ + פְּנֵה (“before”) can be difficult to classify. Yet it should be noted that the purpose of this part of the study is not necessarily to classify these items properly, but to ensure that students are learning multi-word items that are frequent both in the Book of Joshua and the Hebrew Bible as a whole. In fact, students learning these items should likely not be troubled with learning the categories and what they are, but rather can simply be told that they are learning multi-word items.

¹¹ For the sake of space and clarity of formatting, I have not included the definitions of multi-word items in the tables. The definitions can all be seen easily in weeks 10–12 of the paper-based workbook found on the accompanying website (visit <http://biblicalhebrewvocabulary.com/> and click the link for the paper-based workbook found on the homepage).

Compounds	Phrasal verbs	Idioms	Fixed phrases
	בוֹא + אֵל	בוֹא + בַּיִת	אֲשֶׁר + אֵת
	הִלְךְ + אֵל		אֲשֶׁר + דְּבַר
	שׁוּב + אֵל		אֲשֶׁר + עָשָׂה
	שָׁלַח + אֵל		כֹּל + אֲשֶׁר
	יָצָא + מִן		כִּי + אֲשֶׁר
	עָלָה + עַל		דְּבַר + אֲשֶׁר
	יָדַע + כִּי		כִּי + אִם
	נָתַן + לְ		אָמַר + אֵל
	לָקַח + מִן		לֹא + יָדַע
	יָשַׁב + עַד		לֹא + שָׁמַע
	יָשַׁב + בְּ		אִם + לֹא
	שׁוּב + אַחֲרַי		לֹא + אֵל
	הִלְךְ + אַחֲרַי		לֹא + כִּי
			הִלְךְ + הִלְךְ
			כִּי + דְּבַר
			כִּי + דְּבַר
			דְּבַר + דְּבַר
			דְּבַר + אָמַר
			כִּן + אָמַר
			כֹּה + אָמַר
			אִישׁ + אֶחָד
			אִישׁ + אִישׁ
			אֶחָד + אֶחָד

As for the presentation of the resulting multi-word items, a few comments are necessary. First, the items will be presented in groups based on the component parts. For instance, $\text{לְ} + \text{פָּנֶה}$ (“before”) and $\text{מִן} + \text{פָּנֶה}$ (“away from”) will be presented together on account of the commonality of פָּנֶה (“face”). Second, in order to decrease the learning burden, proper nouns are inserted into the multi-word items rather than being learned separately. For example, many proper nouns will be inserted into phrasal verbs like $\text{כִּי} + \text{יָדַע}$ (“he knew that”). Third, some items have been combined to form one item. For example, two items, $\text{כִּי} + \text{הָ} + \text{בֶּ} + \text{יָד}$ (“into the hand”) and $\text{יָד} + \text{נָתַן}$ (“he gave + hand”) can be combined into one, i.e., $\text{יָד} + \text{הָ} + \text{בֶּ} + \text{נָתַן}$, “he gave into the hand.” Fourth, in some places ‘X’ has to be inserted into slots. For example, in the item $\text{כִּי} + \text{אֵל}$ (“not + because”) someone is usually told not to do something and then given the reason why they should not do it. Therefore, the item is learned as $\text{כִּי} + \text{‘X’} + \text{אֵל}$ (“do not X because”).

With the procedure for finding the multi-word items described and the presentation of the items explained, the resulting list of multi-word items is as follows:

Table 9. Multi-Word Items for a First-Semester Course in BH (Final)¹²

Compounds	Phrasal verbs	Idioms	Fixed phrases
$\text{אֵל הַיּוֹם} + \text{אָב}$	$\text{אָמַר} + \text{אֵל}$ $\text{דִּבֶּר} + \text{אֵל}$	$\text{לְ} + \text{פָּנֶה}$ $\text{מִן} + \text{פָּנֶה}$	$\text{לְ} + \text{מָה}$
$\text{בֵּית} + \text{אָב}$	$\text{קָרָא} + \text{אֵל}$	$\text{בֶּ} + \text{עֵינַיִן}$	$\text{הָ} + \text{לֹא}$
$\text{כָּל} + \text{נֶפֶשׁ}$	$\text{הָיָה} + \text{אֲחֵרִי}$	$\text{יָד} + \text{נָתַן}$ $\text{כִּי} + \text{יָד}$	$\text{הָיָה} + \text{יוֹם}$ $\text{כִּי} + \text{יוֹם}$
$\text{כָּל} + \text{עַם}$	$\text{הָיָה} + \text{כִּי}$	$\text{בֵּן} + \text{שָׁנָה}$	$\text{יוֹם} + \text{יוֹם}$
$\text{כָּל} + \text{אֶרֶץ}$	$\text{עָשָׂה} + \text{כִּי}$	$\text{הִלְךְ} + \text{דֶּרֶךְ}$	$\text{כָּל} + \text{אֲשֶׁר}$ $\text{אֲשֶׁר} + \text{עָשָׂה}$
$\text{כָּל} + \text{דְּבָר}$	$\text{עָשָׂה} + \text{כִּי}$	$\text{בּוֹא} + \text{בֵּית}$	$\text{כִּי} + \text{אֲשֶׁר}$
	$\text{בּוֹא} + \text{אֵל}$ $\text{הִלְךְ} + \text{אֵל}$		$\text{כִּי} + \text{אֵם}$

¹² See footnote 11 above with regard to definitions of the multi-word items.

Compounds	Phrasal verbs	Idioms	Fixed phrases
	יָצָא + מִן שׁוּב + אֶל		אָמַר + אֶל
	שָׁלַח + אֶל		לֹא + יָדַע לֹא + שָׁמַע
	עָלָה + עַל		אִם + לֹא
	יָדַע + בִּי		לֹא + אֶל
	נָתַן + לְ לָקַח + מִן		לֹא + בִּי
	יָשַׁב + בְּ יָשַׁב + עַד		כִּי + דִבֶּר
	שׁוּב + אַחֲרַי		כִּי + דִבֶּר
	הִלָּךְ + אַחֲרַי		דִבֶּר + אֲשֶׁר דִבֶּר + דִבֶּר אֲשֶׁר + דִבֶּר
			דִבֶּר + אָמַר
			כִּהּ + אָמַר
			אִישׁ + אֶחָד אִישׁ + אִישׁ אֶחָד + אֶחָד

4.2.3 Summary

In sections 4.2.1 and 4.2.2, I determined how many items should be learned and which items these should be in order to meet the goals of this study. It was first determined that learners should acquire 84 individual words per course along with the respective semi-productives, irregulars, and multi-word items. The resulting list includes a total of 133 items, or in the case of some multi-word items, groups

of items. The addition of semi-productives, irregulars, and multi-word items should not significantly add to the learning burden. By the time the additional items are introduced, the base forms for the semi-productives and irregulars will already be known along with the component parts of the multi-word items. This appears to be a reasonable amount for a first-semester course in BH, especially when compared with some other introductory BH grammars (e.g., Pratico & Van Pelt 2001). With these lists compiled, I will now explain the exercises developed for students to use in learning them.

4.3 The Implementation of the Strategies

At this point, it is necessary to demonstrate potential ways in which the strategies from Chapter 2 could be implemented in order to help learners acquire the vocabulary items from section 4.2 of the present chapter. I will proceed by taking each of the useful strategies from Chapter 2 and explaining deductively how these strategies have been implemented in the computer-based exercises, which would likely be the most common use of these materials.¹³ I would recommend that the reader examine the vocabulary materials at <http://biblicalhebrewvocabulary.com/> in order to get hands-on experience with what is being explained in the subsequent sections.

Two matters require attention. First, I will explain how the new approach to BH vocabulary learning was incorporated into the overall structure of a grammar. Second, I will restate the strategies that I claimed would be useful in Chapter 2 so that the reader need not return to that chapter. One additional point should be reiterated: a *comprehensive* solution as to how to incorporate a new program for learning BH vocabulary into a grammar is beyond the scope of this study (see section 1.1.3). This would be a matter for further study. As should be clear from the analysis in the preceding chapters, there is no current grammar that is well-equipped for the new approach. One issue can serve as an example on this point. Consider that the approach developed in this study follows the vocabulary of the Book of Joshua — no current grammar follows this corpus, either in general (i.e., as an inductive text) or for the selection of vocabulary in particular. There are other matters that would present difficulties, and to deal with them in a satisfying manner would have required nothing short of writing a completely new grammar or modifying a current grammar so substantially as to make it almost completely new.

With these provisos in mind, I would simply state that for the purposes of this study the vocabulary was incorporated into a grammar that did not contain any traditional vocabulary lists and included little grammatical information in the material for the first semester. The text used in this case was the first fourteen chapters of Van der Merwe (2005a). There are vocabulary exercises in the text; however, these exercises are not in the form of lists containing lexical items for explicit learning. Most of the exercises are “diglot weaves” of a fill-in-the-blank variety. There are also lists in the text; however, the lists do not start until the second-semester material. It was then simple to incorporate

¹³ A text-based workbook is also provided on the accompanying website to demonstrate how similar exercises could be implemented in a text-based format (visit <http://biblicalhebrewvocabulary.com/> and click the link to the paper-based workbook found on the homepage).

the new vocabulary program. The vocabulary materials were unobtrusively added to the material in the grammar workbook. This may have required a bit of extra time commitment from the learner in the case study in Chapter 5; however, this allowed the task of integration into a grammar to be postponed until a later stage after the vocabulary program could be tested.

In the new approach, as little grammatical information as possible was included with the vocabulary items themselves. Some grammatical information was incorporated by color-coding the items by part of speech (see section 2.2.2) and by drawing attention to semi-productive and irregular forms. But, this type of information was quite limited. In this way, the incorporation of the vocabulary in this study mirrored the audio-lingual method found in materials like those of *Pimsleur*.¹⁴ Students would learn that **אָמַר** means “he said” and that **אָמַרְתָּ** means “he said” without being told that **אָמַר** is *Qal* and **אָמַרְתָּ** is *Piel*. This grammatical information would be introduced at a later stage, after learners knew what these terms meant. It was not pertinent for the student learning the meaning(s) of the items at an early stage in their grammar learning; they would be able to translate **אָמַר** as “he said” and **אָמַרְתָּ** as “he said” without need of this grammatical information. In terms of inflected forms, students were simply alerted to the fact that BH is an inflected language, but they did not have to learn the inflections in the initial phase. This approach in many ways mirrors the method found in inductive grammars that do not cover many verbal stems until later. Students using inductive grammars are told what the words mean without further explanation. How the more extensive, explicit presentation of grammar would be combined with a new approach to BH vocabulary learning is a question for future research.¹⁵

Now that I have discussed the relationship between the overall structure of a grammar and the new vocabulary program, I will once again list the strategies identified as potentially helpful in Chapter 2. They are the following:

Factor 1: Strategies involving authentic language use	Factor 2: Strategies involving creative activities	Factor 3: Strategies used for self-motivation
Read L2 literature and poetry	Use computer program to practice words	Enjoy learning new vocabulary
	Physically act out new words *	Feel successful when learning new words
	Use color-coded flashcards (genders)	
Factor 4: Strategies used to create mental linkages	Factor 5: Memory strategies	Factor 6: Visual/auditory strategies
Link word to L1 word similar spelling *	Repeat new word aloud several times	Arrange words on page to form patterns
Link word to similar sounding L1 word *	Review frequently	Draw pictures of new words *

¹⁴ See: <http://www.pimsleur.com/>

¹⁵ This will be discussed in more detail in Chapter 6, which concludes this study.

Create links with already known words *	Concentrate hard to avoid distractions	Give myself reward or treat
Relate new words to myself	Quiz myself or have others quiz me	Talk to someone about feelings
	Break lists into smaller parts *	

Factor 7: Strategies involving physical action

- Use pantomime and gestures to practice *
- Practice word by using real objects *
- Physically act out new words *
- Relate new words to myself

Factor 8: Strategies used to overcome anxiety

- Notice when tense or nervous
- Talk to someone about feelings

The following sections explain how each of these strategies was implemented in the new vocabulary program.

4.3.1 Strategies Involving Authentic Language Use

In Chapters 2 and 3, I discussed the importance of strategies involving authentic language use, pointing out that current BH instructional materials do not expose learners to enough text for implicit learning to take place. Consequently, a significant amount of time was spent in developing ways of exposing students to larger amounts of text. I did this in two ways.

First, along with the meaning of each vocabulary item, I provided examples of its usage in a genuine context. These examples were generally short, being no more than about five to seven words in length, and were chosen based upon Accordance searches for the most common forms of the particular lexical item in the Book of Joshua. The following is a screenshot of the meaning page for the item אָמַר, “he said”:¹⁶

¹⁶ The computer program will be explained in more detail below. In general, the program functions much like flashcards. When meaning pages are referred to in this chapter, one should imagine the back side of a flashcard with the English meaning.

Figure 1. Screenshot - Meaning page for אָמַר



On this meaning page, the English gloss of the BH lexical item is at the top, followed by three examples of אָמַר, “he said,” from Joshua. The two most common forms were אָמַר, “he said” and ויאמר, “and he said.” The meaning pages do not contain a significant amount of BH text, but these small amounts would add up over the span of a semester course.

Consider that most meaning pages contain at least two examples, each of which consists of a minimum of five words. This means that there are at least ten BH words on each meaning page. Second, there are meaning pages for 133 lexical items. This suggests that on the meaning pages learners could be exposed to at least 1,330 words of BH text on first usages. Finally, each meaning page is used a minimum of three times throughout the course of the program. This means that learners are potentially exposed to 3,990 words of BH text on the meaning pages alone. This is more text than is found in most BH graded readers (see section 3.3.1.3). However, it should be noted that learners are not *required* to use the contexts on the meaning pages.

The second and by far more abundant source of text is found in the computer-based listening exercises, which learners were required to use each day they worked with the program.¹⁷ The listening exercises were based on the approach used in Dobson (2005) and the procedure described by Hulstijn (2003). One of Hulstijn’s conclusions (2003:423) provides a good preface to the listening exercises: “Since their invention, computers have been used in L2 instruction mainly for the application of explicit declarative rule-based knowledge (vocabulary and grammar drills).” Thus, according to Hulstijn’s (2003) conclusion, the computer-based listening exercises developed for this program are a relatively new concept even within the wider context of second language learning

¹⁷ An attempt was also made to also develop text-based listening exercises; however, these were abandoned due to the necessity of interlinear translation. Students using the text-based workbook but do not have a computer might be required to do the listening exercises at a library or computer lab.

research. As such, these exercises represent a first approximation of what computer-based listening exercises for a BH vocabulary program could look like, since no others have been developed.¹⁸

The listening exercises in Dobson (2005) are arranged with BH text and an English translation of the text side-by-side in columns. The audio recordings are provided on a CD that accompanies the textbook. English translation is first read aloud, followed by the BH text, so that the learner will then be able to understand the BH. At first, I considered adopting Dobson's approach directly by using his textbook as an accompaniment to this vocabulary program. However, I decided not to do so based on two primary considerations. The first consideration was that I was not sure that having the English translation beside the text was the best approach. As far as I am aware, no research has been done on this matter, but I was concerned that the learners' eyes would be drawn to the English text, since this is what they would find easier to understand. The second consideration was a practical one. I was unsure whether the audio recordings were as slow as they needed to be for beginning learners, at least at first. With this in mind, I wanted to develop listening exercises that avoided the use of English text and also began somewhat slower before moving up to a faster speed.¹⁹

The approach suggested by Hulstijn (2003) is similar to the one used in Dobson (2005). Hulstijn (2003) proposes using short videos and breaking them down into very small segments (e.g., a phrase or sentence at a time). The small segments of video are enhanced with L2 text; however, he also suggests that L1 translations of unknown L2 words can be included in parentheses. Learners are then provided with three options for watching the videos: 1) watching nonstop without the L2 text (i.e., like normal television watching), 2) watching fragment by fragment without the L2 text, and 3) watching fragment by fragment with L2 text functioning like subtitles. Hulstijn's (2003) study demonstrates that there is a precedent in the applied linguistics literature for Dobson's type of exercises and for the idea to use video instead of only audio recordings. Because I wished to use a format similar to Dobson's, but wanted to avoid the use of English text, video provided an ideal medium for this. BH lexical items could be translated aloud while scrolling over them without a text version of the translation. In addition, audio recordings from native speakers of Modern Hebrew could be used for the videos and be slowed down.²⁰

Against this background, I developed the listening exercises for the new BH vocabulary program. The listening exercises were created in Quicktime video format using a screen capture program called SnapzPro X. This program was ideal because it allowed recording of a computer screen, recording of audio input via a microphone plugged into a computer (English translation), recording of audio input

¹⁸ The exercises developed by Dobson (2005) are not computer-based, but rather are on an accompanying audio CD.

¹⁹ The speed of the audio may be pointed out as a potential problem with the genuine contexts on the meaning pages of the flashcards. However, the meaning pages were only included after learners had already done six weeks of listening exercises. Thus, there is reason to believe that the learners would have been able to keep up with the audio for the genuine contexts.

²⁰ Though as a non-living language BH has no "native speakers," a speaker of Modern Hebrew can be used, since many approaches to teaching BH employ Modern Hebrew pronunciation.

via a track played on a computer (native speaker's pronunciation of the Hebrew), and the ability to export to Quicktime format.²¹ Quicktime was chosen for the videos because it works across platforms and is available as a free download.

For the videos, the text of the Book of Joshua was broken down by the cantillation marks into short segments. The segments of text were then copied into slides with roughly one verse included on each slide.²² First, a verbal translation of the segments was provided as I scrolled over each lexical item individually and stated its meaning aloud.²³ Second, an audio recording of a native Hebrew speaker reading the short segment of BH text was played. The learner's experience when these Hebrew audio recordings are played changes throughout the course of the program. At first, when the recording of the BH reader is played it is slowed down to half speed. However, at several points during the course of the program the audio recordings are sped up. By the end of the first-semester course, the BH audio recordings are up to normal speed. In addition, at the beginning of the program the pointer is used to guide the learner's eyes when the recording of the BH reader is played. By the end of the course the use of the pointer is abandoned. Thus, the listening exercises gradually increase in difficulty. The intention is that by the end of four semesters of using the listening exercises, a learner would be able to listen to the text of the Book of Joshua at normal speed without English translation and understand it.

The following screenshots are from one of the listening exercises. They demonstrate how the text of Joshua 1.1 was broken down and how the pointer would be used throughout the exercises. For both the the English translation and for following along with the native speaker, the pointer is placed just beneath the text:

²¹ The audio recordings of the native Hebrew speaker were played and slowed down using Quicktime.

²² Apple's Keynote was used for the slideshows.

²³ Translations follow almost verbatim those found in the LEXHAM Hebrew-English Interlinear by Logos Research systems.

Figure 2. Screenshot - Listening Exercise (Example 1)

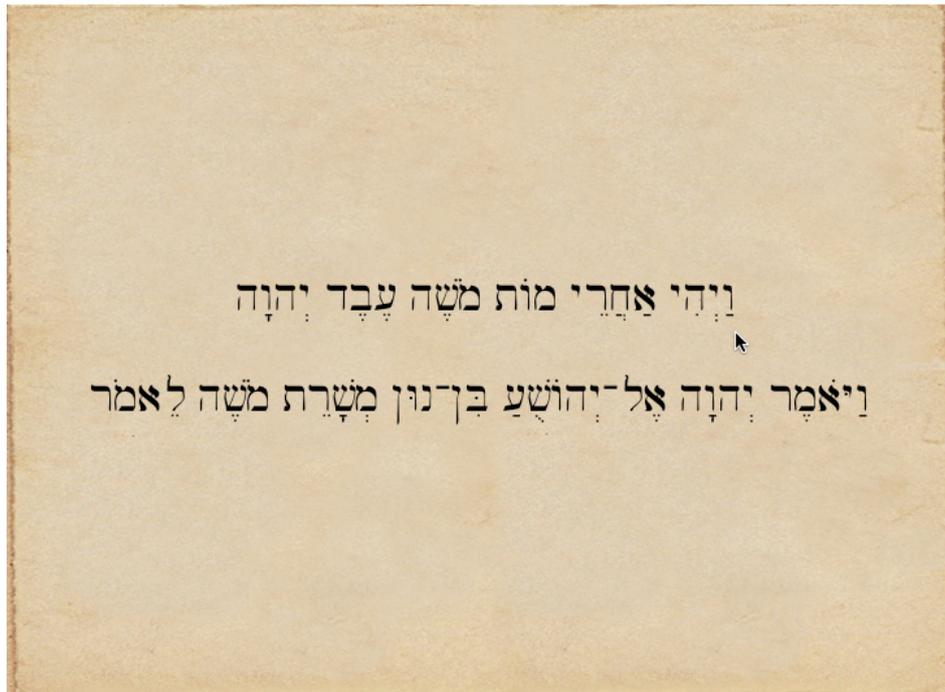
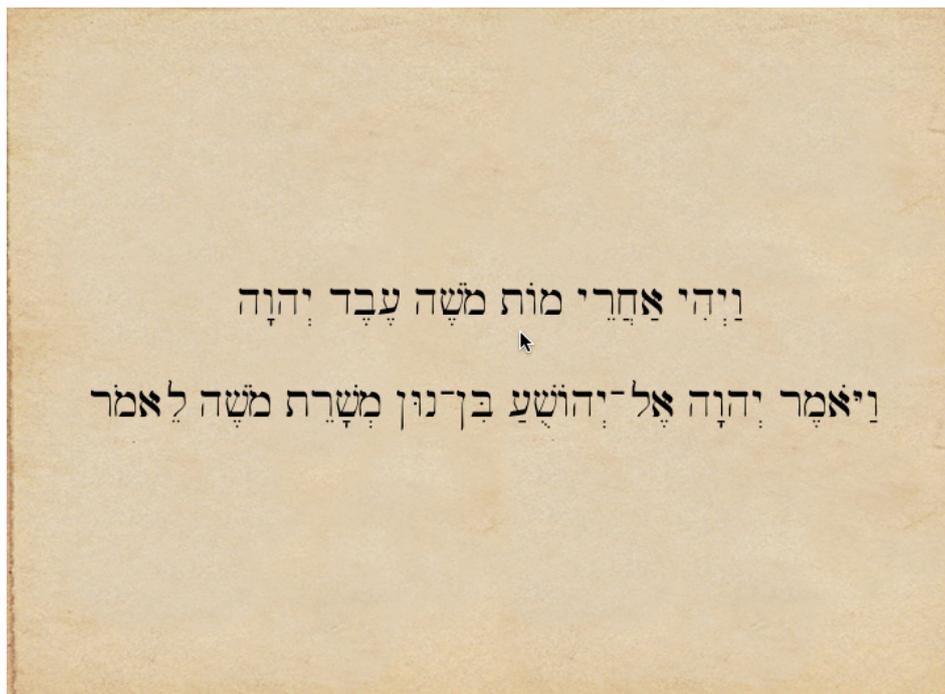


Figure 3. Listening Exercise (Example 2)



The amount of text used in each of the listening exercises was determined by optimal time and not by the number of words that would be best for beginning learners. This decision was based upon the research of Cho, Ahn, and Krashen (2005) and Cho, Kim, and Krashen (2004) discussed in 3.3.1.2. These studies demonstrate that learners improve with 40 minutes per week of meaning-focused

reading. Listening exercises appear in the program four days out of the week; therefore, each listening exercise is a minimum of ten minutes long to make sure that learners receive at least 40 minutes of meaning-focused instruction. The end boundary follows Day and Bamford (1998:84), who suggest that beginning learners may not be able to do extensive reading for more than about 20 minutes at a time. The longest listening exercise in the program is about 15 minutes long.

4.3.2 Strategies Involving Creative Activities

Within this category, there were three potentially useful strategies: use computer program to practice words, physically act out new words, and use color-coded flashcards. Each of these strategies was implemented, the first being the most broadly used strategy in the entire program and the last two being relatively simple.

4.3.2.1 “Use Computer Program to Practice Words”

In order to make use of this strategy, a computer-based course for an entire first-semester introduction to BH that included the computer-based program for learning BH vocabulary was developed based on the grammar workbook by Van der Merwe (2005a). There are other computer programs available for practicing BH vocabulary; however, they employ strategies that were found to be problematic in Chapter 2 of this study. In addition, it was difficult to see how these currently existing programs could be used, since the use of a wide variety of VLSs is not integrated into them. For example, below I will discuss the use of color-coded flashcards, which is not incorporated into any of the currently available computer programs. Thus, the use of a computer program to practice words and the use of color-coded flashcards would have had to be two separate activities. With the development of a new computer program for this study, both of these strategies could be integrated.

As a brief overview of the computer program developed for this study, I will discuss a number of its features. First, it was developed for use with web browsers, which are free, and most computer users know how to use them. This avoids problems for the user related to installation and system requirements, though it also placed some limitations on the program. In a similar vein, no Hebrew fonts were used, in order to avoid problems with cross-platform use and the need for installing fonts. Rather, all Hebrew text is either in image or video format, which is not dependent upon having a particular font installed.²⁴

The program is broken down by weeks into days, and then into a number of daily exercises. Many of the daily exercises are recurring and will be discussed in detail below. The following three screenshots demonstrate the weekly breakdown, the daily breakdown, and the exercise breakdown that one would find by clicking farther and farther into the program.

²⁴ It is my understanding that certain advancements have been made and continue to be made with regard to Hebrew fonts, such that the use of images would likely not be necessary for future editions of a vocabulary program.

Figure 4. Screenshot - Weekly Breakdown

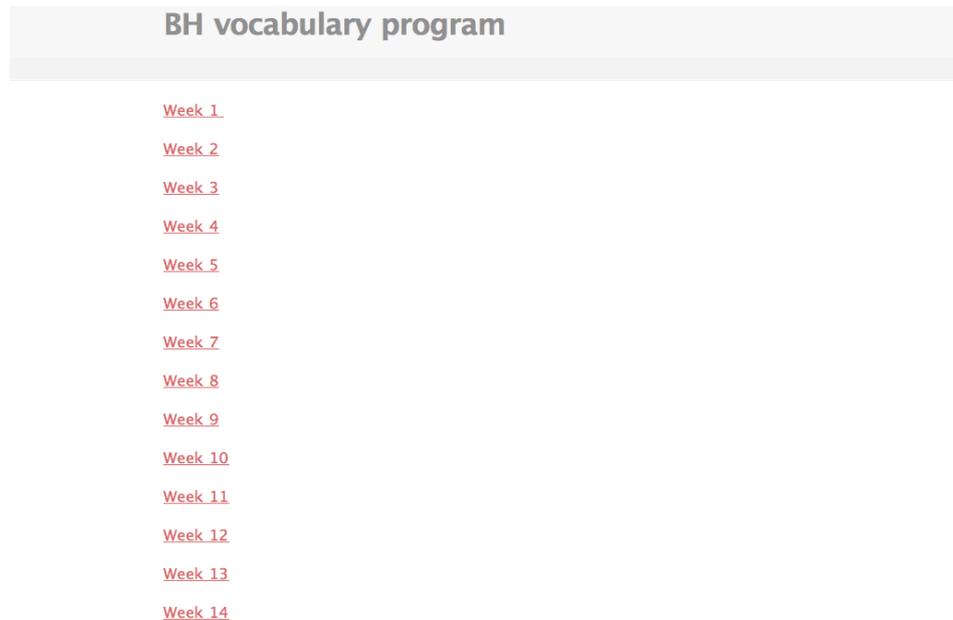


Figure 5. Screenshot - Daily Breakdown

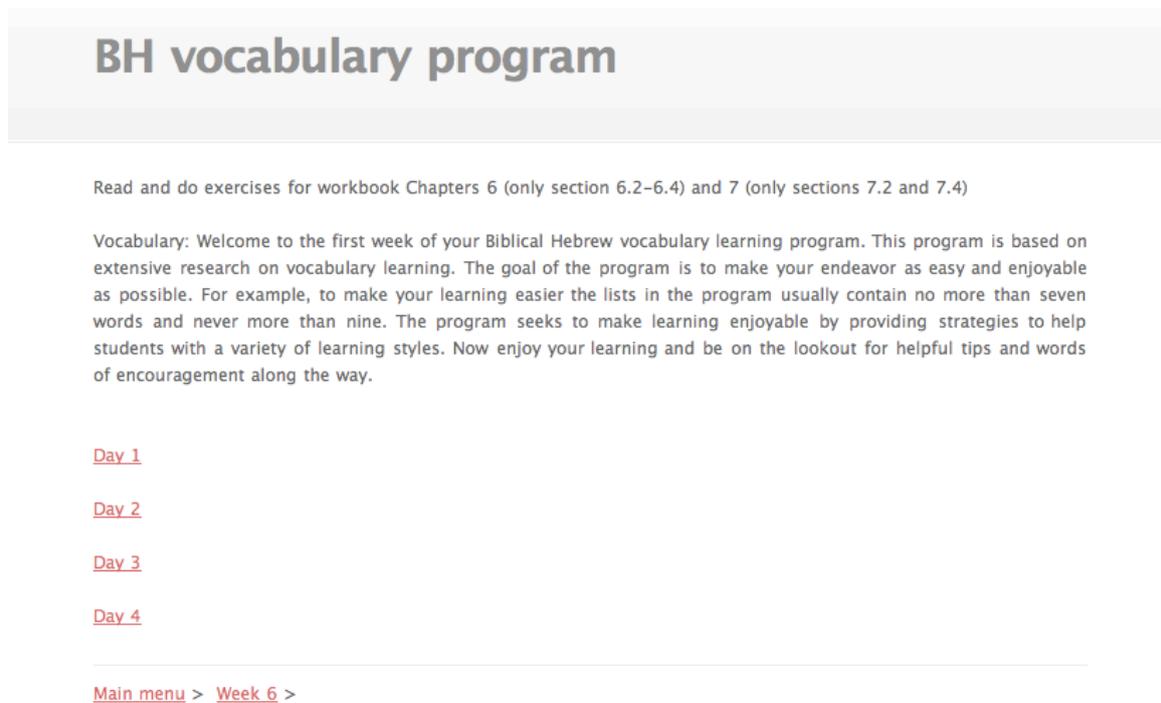
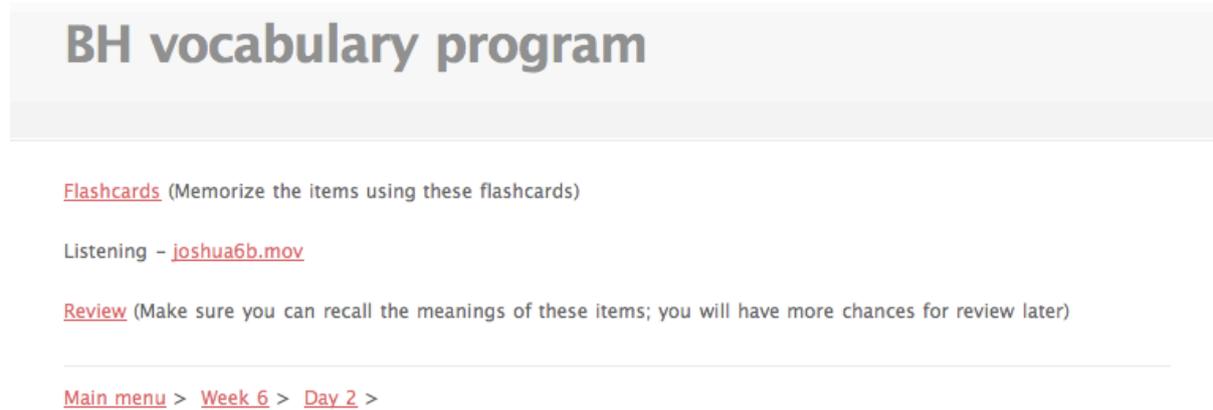


Figure 6. Screenshot - Daily Exercises



A significant number of other features could be discussed at this point; however, the primary idea is that the strategy “*use computer program to practice words*” was incorporated very broadly. In fact, it is the overarching strategy into which all of the other strategies were integrated.²⁵ Thus, many of the other strategies used in the program will be discussed below.

4.3.2.2 “*Physically Act Out New Words*”

A second strategy involving a creative activity was encouraging learners to act out new words. In the list above, this strategy was identified as one with limited usefulness. It works better with verbs, and there are some items like “and” and “the” that simply cannot be acted out very easily. In addition, this strategy may not be appealing to introverted learners. This strategy was, therefore, incorporated in such a way that it was made available to learners, but was not required.

In the screenshot of the breakdown of daily exercises above, there is a link labeled “flashcards.” When this link is clicked, it leads to a page with a list of lexical items for the day, along with their meanings in English.²⁶ Underneath this list is a link entitled “cards.” When this link is clicked, it leads to the flashcards for the day. (An example of a flashcard page is given in 4.3.2.3 below, which discusses the use of color-coded flashcards). Most strategies are implemented on the meaning pages of the flashcards, and this is the way in which physically acting out new words was incorporated. Below is a screenshot of the meaning page for the word הָלַךְ (“he went, walked”):

²⁵ To understand fully how this strategy has been used, it would be best for readers to spend some time examining the accompanying website (<http://biblicalhebrewvocabulary.com/>).

²⁶ Upon first exposure, the BH items and their meanings are presented together, so that the first use of the flashcards can make use of recall. Afterwards, the lists containing both BH and English are removed.

Figure 7. Screenshot - Physical Action (Example 1)

He walked, went

וְהָלַךְ הַגְּבוּל אֶל-הַיָּמִין
and the border **went** to
the south

וַיִּהְיוּ הַקְּהֹלִים לִפְנֵי הַלֵּךְ
And the armed guard **was**
walking before the priests

אֲשֶׁר-הָלַךְ יִשְׂרָאֵל בַּמִּדְבָּר
when Israel **walked** in
the wilderness

Strategies:

[VR 1](#)

[VR 2](#)

[VR 3](#)

[Keyword](#)

[Physical action](#)

[Personal experience](#)

[Pantomime/gesture](#)

[Picture](#)

Notice at the bottom of the screenshot, there is a section on the meaning cards labeled “Strategies.” In the bottom row of strategies, there is a link entitled “Physical Action.” When this link is clicked, the learner arrives at the following page:

Figure 8. Screenshot - Physical Action (Example 2)

BH vocabulary program

Stand up and *walk* around

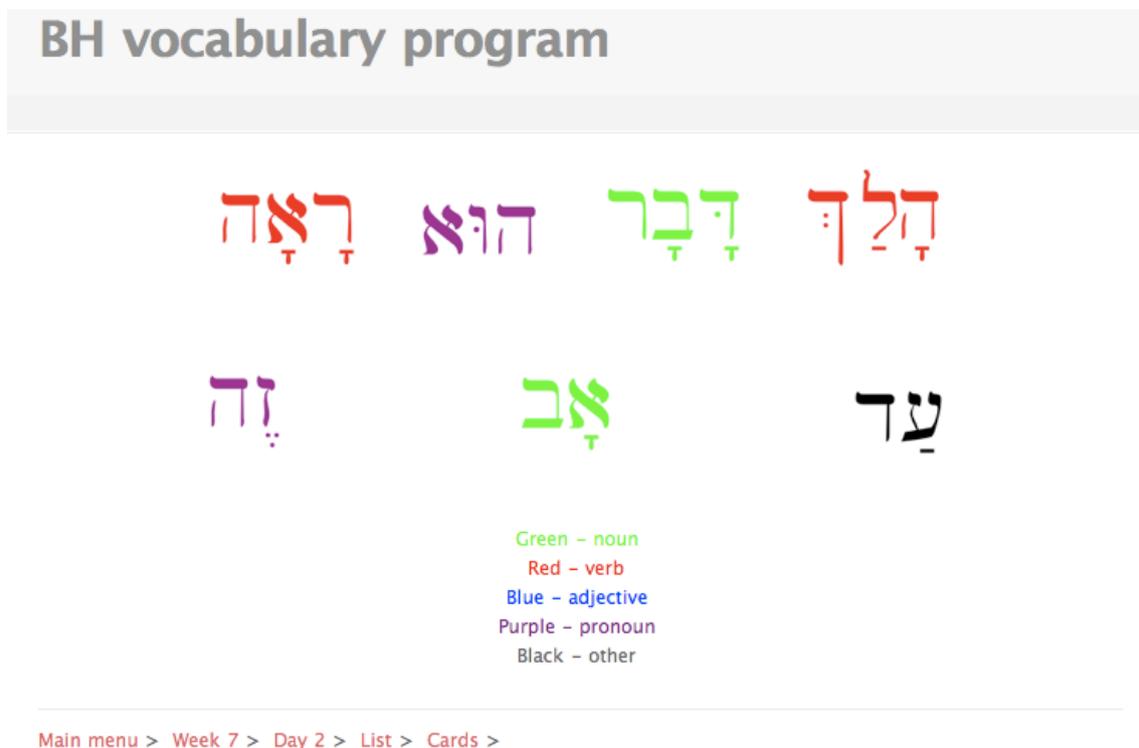
[Main menu](#) > [Week 7](#) > [Day 2](#) > [List](#) > [Cards](#) > [Meaning 1](#) > [Physical action](#) >

The learner is encouraged to “walk” around in order to associate that action with the BH word **הִלֵּךְ**.²⁷ This example is representative of the way in which this strategy was incorporated throughout.

4.3.2.3 “Use Color-Coded Flashcards”

A final strategy in the creative activity category is the use of color-coded flashcards. This strategy provides one of the reasons why using a computer program can be advantageous. For sets of pre-made flashcards available for purchase, the use of color is not cost effective because color printing is far more expensive than black and white. Yet with a computer program, color can be used at no additional cost. It is fairly easy to demonstrate how this strategy was implemented. As indicated above, after viewing the list of words for a given day, the learners can click a link that says “Cards.” They would then arrive at a page that is similar to the following:

Figure 9. Screenshot - Color-coded “Flashcard” Page



I will point out three features here. First, different grammatical categories of words are given in different colors. Verbs are red; nouns are green; and so forth. Second, there is a key at the bottom that is always present on the flashcard pages. Third, there is a category “other,” which is black. I made the decision to combine a number of different kinds of words together (e.g., adverbs, conjunctions, etc.) in order to avoid a considerable number of subdivisions and color-codings that

²⁷ Through the testing of the new program it was determined that it might also be helpful to include the BH word again on this page. In other words, the suggested physical action would become “stand up and walk (הִלֵּךְ) around.” This was done on the pages employing the strategy of using a picture; however, it was not used on the other strategy pages during the testing period.

might cause confusion. The implementation of this strategy goes well beyond the coding for gender, which was suggested in the applied linguistics literature (Stoffer 1995:123); however, I am unable to think of any reason why dividing into major grammatical categories might not be at least as helpful, if not more so.

4.3.3 Strategies Used for Self-Motivation

In the preceding section, I discussed how strategies involving creative activities were incorporated into the program. In this section I will discuss how strategies for self-motivation were included. As the label suggests, *self*-motivation is somewhat difficult to implement because what a person finds motivational can be very individual.

4.3.3.1 “Enjoy Learning New Vocabulary”

Enjoyment of learning was promoted in the program both implicitly and explicitly. As regards implicit encouragement, one of the suggestions from Dornyei (2001:112–13) cited in Chapter 2 of this study was taken into consideration. She suggests that in order for students to enjoy learning, new twists should be added to tasks. In the program developed for this study, novelty was sought by providing a significant number of strategies for learning each individual word. This should be evident from the screenshot for the word  above (see section 4.3.2.2). For this word, the suggested strategies were verbal repetition, keyword (link to L1 word with similar sound), physical action, personal experience (relate word to oneself), pantomime/gesture, and picture. These strategies are verbal, visual, and kinesthetic. In addition, there is variety in the types of material being learned at on time, ranging from individual words, to irregulars and semi-productives, to multi-word items. Finally, there are shifts to semantic association exercises, like those outlined in section 4.3.4.3 below. All of this was intended to deter learners from experiencing what Dornyei calls “satiation” (2001:112–13).

Though a student cannot be forced to enjoy learning, encouragement to enjoyment is scattered throughout the program. Statements such as the following are representative:

Now, enjoy your learning, and be on the lookout for helpful tips and words of encouragement along the way.

An enjoyable atmosphere will facilitate your learning.

Finally, it should be noted that there is only so much that a computer program or workbook can do with regard to the enjoyment of learning. What different individuals find enjoyable is highly variable.

4.3.3.2 “Feel Successful When Learning New Words”

As with the enjoyment of learning, incorporating the strategy of feeling successful when learning new words was also difficult. And, even if such a strategy is incorporated into a program, it is difficult to measure its effectiveness because feelings of success will be subjective. Some students will be

satisfied with any progress at all, whereas others may not be satisfied with anything short of complete mastery. With that said, updates and reminders of what students had already learned were included after week three of the vocabulary learning in an attempt to help learners know how far they had progressed along the way. These statements included the following:

You are nearing the end of your learning of individual words. Beginning next week you will study items that revolve around the individual words that you have already learned (you will see what I mean). This means that the hardest part of your endeavor should be over after this week. In the following weeks your learning will be facilitated as you will *associate* items that you have already studied.

These items should be a great deal easier than the individual items you have learned because you have already seen them in the lists and over and over in the listening activities.

You have already begun to learn some associations between words by learning multi-word items; however, this week you will begin to learn semantic associations between words.

One matter that should be noted here is that this program was developed as a non-credit course for the case study in Chapter 5, so there were no grades. This likely had the positive effect of lowering anxiety; however, grades are also a way in which learners can gauge their success in a course.

4.3.4 Strategies Used to Create Mental Images

In the previous section, I dealt with two strategies that were somewhat difficult to incorporate. However, the implementation of the strategies in this section is more straightforward. These strategies involve making linkages between the BH lexical items and something already known by the learner. All except the third strategy in this section were incorporated by placing a link on the meaning page of the flashcards.

4.3.4.1 “Link Word to L1 Word with Similar Spelling”

As indicated by the asterisk in the list in section 2.2.10 above, this strategy is one that has very limited application. There are not very many words in BH that have similar spellings in English when transliterated. However, in the rare case that this occurred, this strategy was implemented in the same way that physical actions were incorporated (see section 4.3.2.2). On the meaning page I placed a link entitled “Link to English.” The following screenshots provide an example taken from the word **דִּי** (“day”). The first is the meaning page, and the second is the page one reaches when “Link to English” is clicked:

Figure 10. Screenshot - Link with Similar Sounding English Word (Example 1)

The screenshot displays the word "Day" in a large, bold, black font at the top center. Below it, the Hebrew text "וַיְהִיו שָׁם עַד הַיּוֹם הַזֶּה" is shown in black, with "הַיּוֹם" highlighted in red. Underneath the Hebrew is the English translation "And they are there unto this day", with "day" also highlighted in red. A second line of Hebrew text, "בַּיּוֹם הַהוּא גָדַל יְהוָה אֶת־יְהוֹשֻׁעַ", is shown in black, with "בַּיּוֹם" highlighted in red. Below this is the English translation "on that day the LORD made (d.o.) Joshua great", with "day" highlighted in red. At the bottom, the word "Strategies:" is centered, followed by three red underlined links: "VR 1", "VR 2", and "Link to English". Below these are three more red underlined links: "Personal experience", "Real object", and "Picture".

Figure 11. Screenshot - Link with Similar Sounding English Word (Example 2)

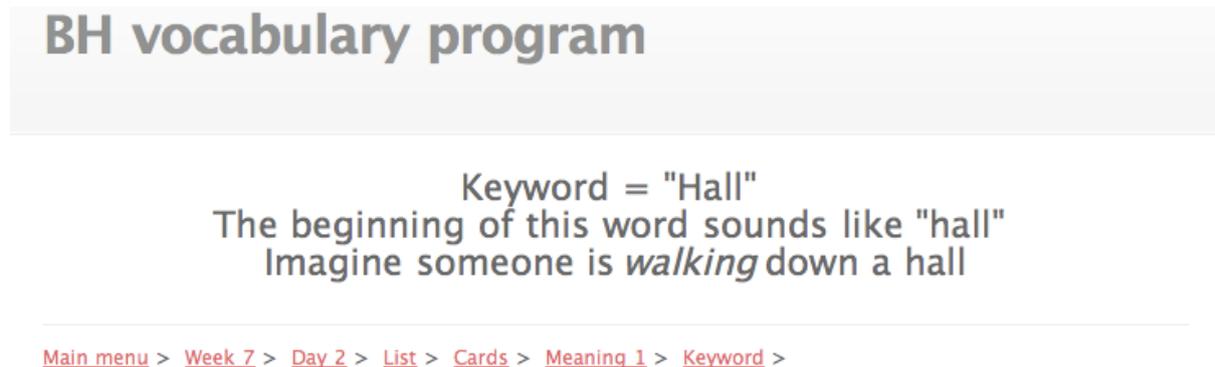
The English transliterated 'Yom Kippur' means 'Day of Atonement'

[Main menu](#) > [Week 7](#) > [Day 1](#) > [List](#) > [Cards](#) > [Meaning 1](#) > [Link to English](#) >

4.3.4.2 "Link Word to Similar Sounding L1 Word"

In Chapter 2, this strategy was referred to as the "keyword technique." It was deemed to be more useful than linking to an L1 word of similar spelling because the L1 word in the keyword technique does not have to be etymologically related to the BH word. All that is necessary is for the L1 word to make it possible to create a mental image, even if only with part of the BH word. As an illustration of how this strategy was included, I will once again use the example of הָלַךְ ("he went, walked") (see section 4.3.2.2 for the meaning page). When the link entitled "Keyword" on the meaning page is clicked, the learner arrives at the following page:

Figure 12. Screenshot - Keyword Technique

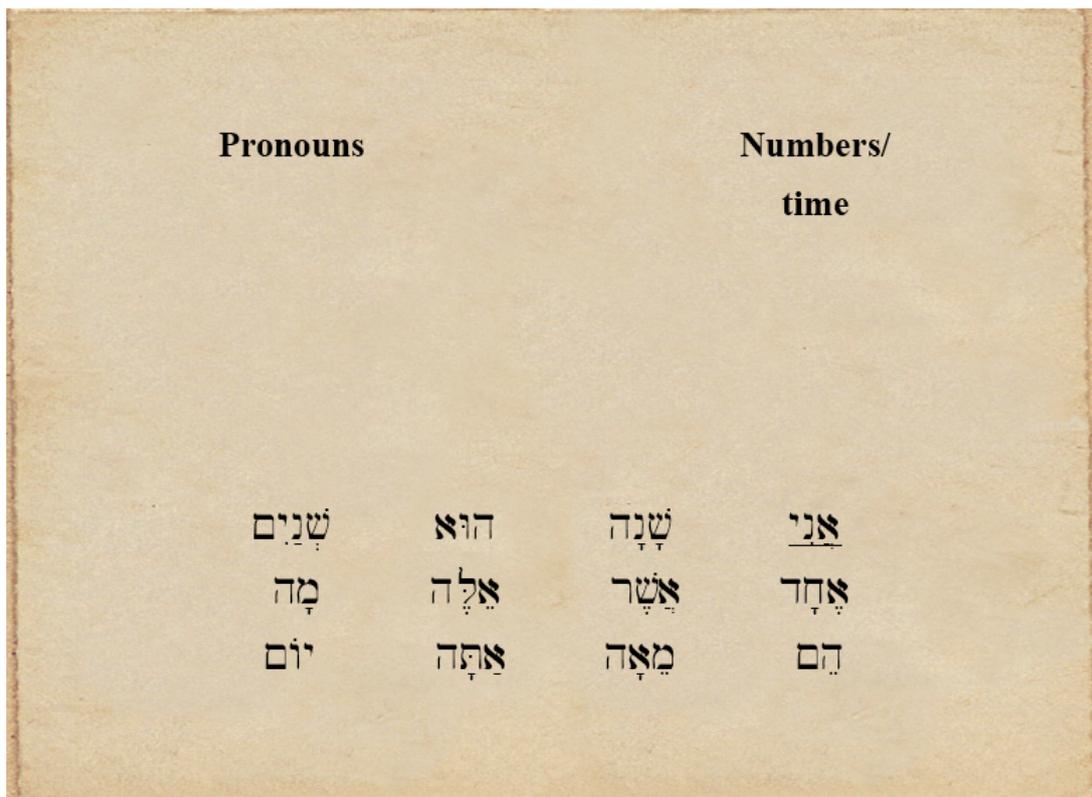
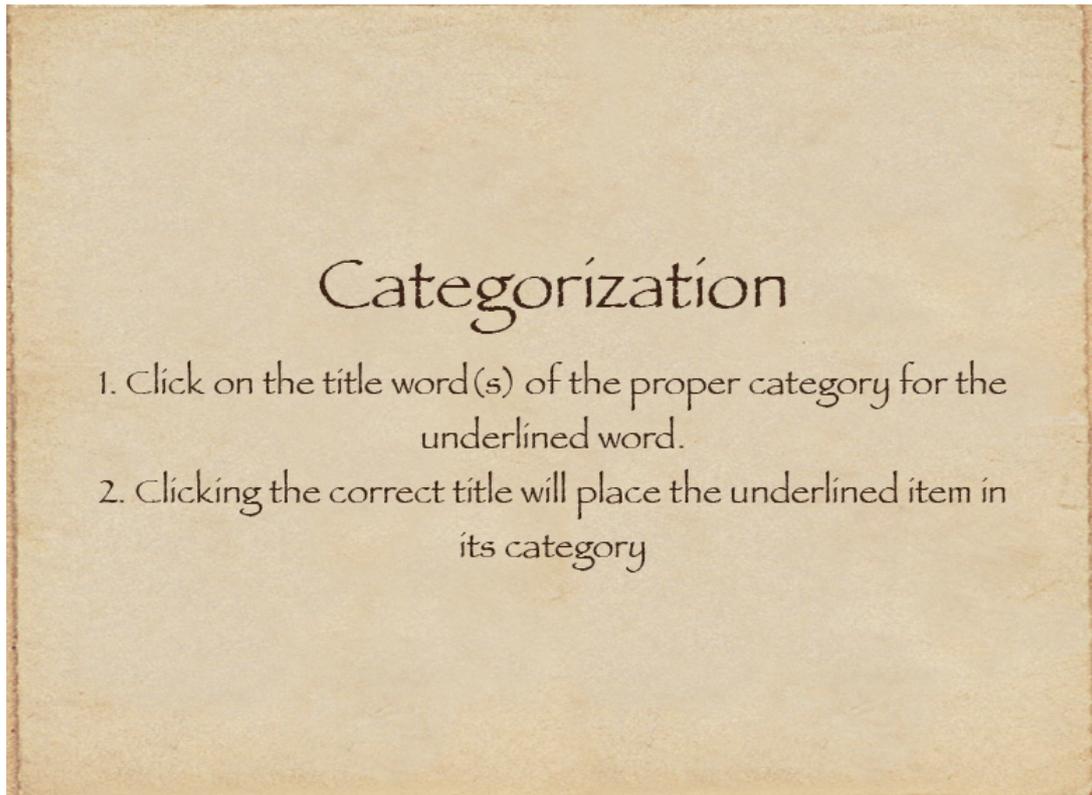


As discussed in Chapter 2, this strategy has two main parts, first the choice of a similar sounding L1 word, in this case “hall,” and second the creation of a mental image that links the L1 word to the meaning of the BH word, in this case “walking down a hall.” Here it is only the initial sound in the word הַלֵּל that is used to create the mental linkage.

4.3.4.3 “Create Links with Already Known Words”

The implementation of this strategy required a different type of exercise than the flashcards used up to this point. According to Nation (2001:303), whose research was considered in Chapter 2, associating words too early in the learning process can lead to interference (also see section 1.1.1). Therefore, I did not consider introducing words through their relations with other words to be the best way of including this strategy. Rather, categorization and matching exercises were developed and placed near the end of the overall program. In this way, learners could gain the benefits of creating associations between already known words with less risk of interference. Below are several sets of screenshots of the categorization and matching exercises, with three in each set:

Figures 13–18. Screenshots - Categorization and Matching Exercises



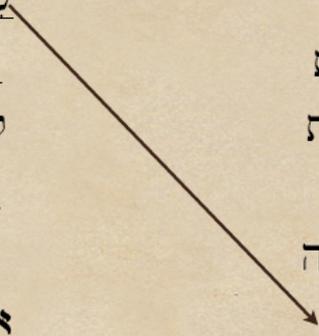
Pronouns		Numbers/ time	
<u>אני</u>			
שנים	הוא	שנה	
מה	אלה	אשר	אחד
יום	אתה	מזה	הם

Matching

1. Click on the word in the second column most closely related to the one underlined in the first column.
2. The items may be synonyms, antonyms, homonyms (similar sound/spelling), or be in the same semantic domain (e.g. nurse/doctor).
3. Clicking the correct answer will produce an arrow connecting the two items.

עם	נה
בן	בת
לא	זאת
זה	ה
ה	אשה
איש	את
בן	אל

עם	נה
בן	בת
לא	זאת
זה	ה
ה	אשה
איש	את
בן	אל

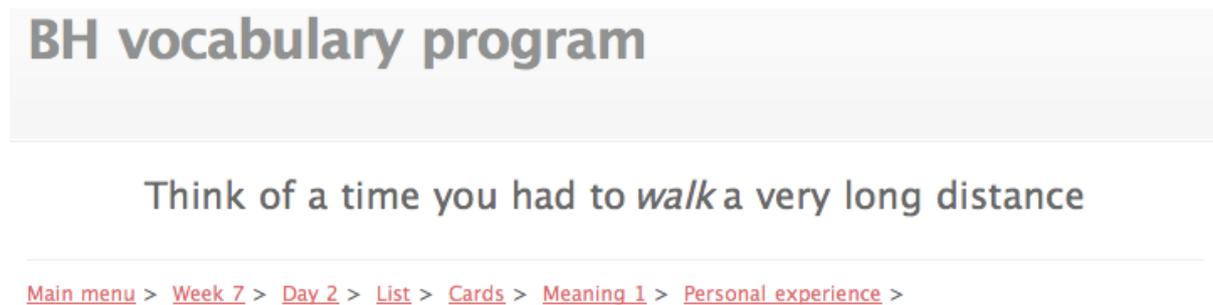


The first slide in each set is the instruction slide that learners would see before completing the exercises. The second and third slides in each set give an example of what the exercises entail, which in each case simply involves clicking on a correct answer. In the categorization exercises, learners are required to click on the correct category into which to place the underlined word; in the matching exercises, learners are required to click on the word most closely related to it. If an incorrect answer is clicked, then nothing happens. When the correct answer is clicked, either the word is placed in its correct category or a line is drawn, connecting the two words. No English glosses are provided, so that these exercises provide both the opportunity to make associations and review the words involved.

4.3.4.4 “Relate New Words to Myself”

Unlike the previous strategy, “relate new words to myself” was implemented in much the same way as the first two strategies in this section. A link on the meaning page was entitled “Personal Experience.” So as to introduce the least number of screenshots possible, I will once again use the example of *הֵלַךְ* (“he went, walked”) above (see section 4.3.2.2; also see footnote 27 with regard to a potential improvement to these pages). When the “Personal Experience” link is clicked, the learner arrives at the following page:

Figure 19. Screenshot - Relate New Word to Oneself



In this way, learners are prompted to create a link between the BH word and something in their life experience.

4.3.5 Memory Strategies

The ways in which the following memory strategies were implemented are more varied than the strategies addressed in the previous section. Rather than creating links in the strategy section of the meaning pages, many of these strategies were included in the overall layout of the program, with the exception of the first one. It will be necessary to introduce a number of new screenshots with longer explanations in this section.

4.3.5.1 “Repeat New Word Aloud Several Times”

Since beginning learners of BH often have difficulty with the pronunciation of the language, this strategy was included by providing audio recordings of the vocabulary items in the midst of genuine contexts from the Book of Joshua. This has already been discussed to some extent in section 4.3.1 above, where I explained how strategies involving authentic language use were implemented; however, in the previous section it was not noted that audio recordings of the genuine contexts were also available. The audio recordings are accessed on the meaning pages by clicking links entitled either “Verbal Repetition” or “VR” (an abbreviation for verbal repetition), followed by a number. The number represents the order of the genuine contexts on the meaning page. The following is an example from the meaning page of יום (“day”):

Figure 20. Screenshot - Repeat New Word Aloud



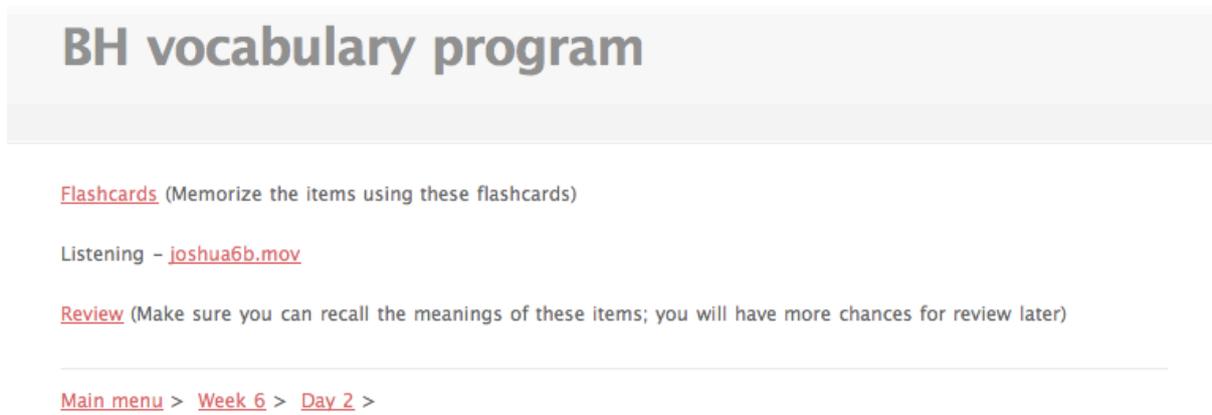
In this example, the learner would activate an audio recording of the first genuine context, namely וַיְהִיו שָׁם עַד הַיּוֹם הַזֶּה by clicking “VR1” and בַּיּוֹם הַהוּא גָּדַל יְהוָה אֶת־יְהוֹשֻׁעַ by clicking on “VR2.” Learners are allowed to click on these links to listen to the phrases read out loud as many times as they would like.

4.3.5.2 “Review Frequently”

The type of review incorporated in this program is “spaced review” with opportunities for review one day, one week, and several weeks after the initial learning of an item (Nation 2001:78). The review is included in a number of ways. First, there are explicit review sessions included one day and one week after initial learning. These are embedded in the overall structure of the program. Recall from section

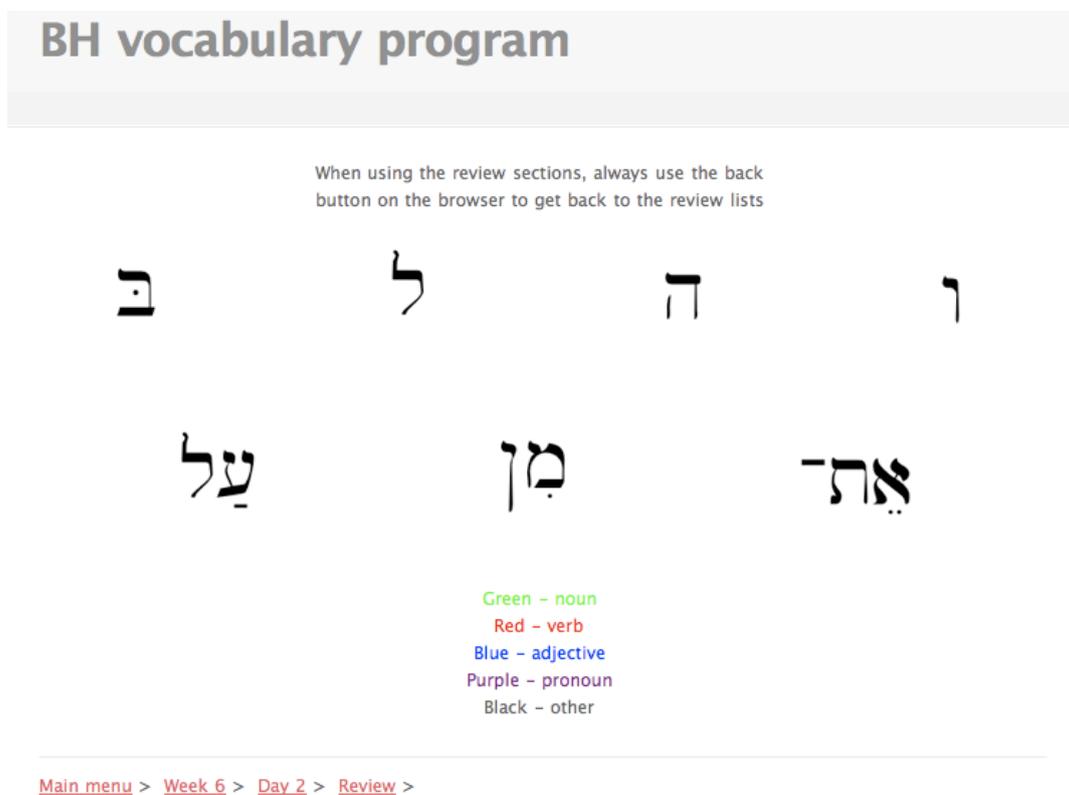
4.3.2.1 above that learners click on links for the particular week and day of the program. After clicking on the “Day” link, learners arrive at a page that looks like the following:

Figure 21. Screenshot - Review Frequently (Example 1)



When the “Review” link is clicked, the learner proceeds to a page similar to the following, though it may contain two sets of words for review (i.e., the words from one day before and the words from one week before):

Figure 22. Screenshot - Review Frequently (Example 2)



Essentially, the review pages look like the initial flashcard pages. The meaning pages from these flashcards are identical to the original meaning pages as well. One difference, however, is that on the

first encounter with the lexical items, learners see them in lists along with their meanings. At the review stage, these lists are not provided, in order that learners get the benefits of using recall.

Second, review is also included in the matching and categorization exercises described in 4.3.4.3. These exercises come near the end of the overall course. The learner is provided with no glosses for the words being categorized and matched in these exercises; therefore, the learner has to recall the meanings of the words in order to complete them. In addition, each of the matching and categorization exercises is done twice, once initially and once one day after. This review should reinforce the associations made between already known items.

4.3.5.3 “*Concentrate Hard to Avoid Distractions*”

As may be clear from the discussions so far, there is a certain degree of overlap in the implementation of a number of strategies. Implementation revealed a significant amount of overlap between this strategy and that of enjoying vocabulary learning, though the two are not linked in Stoffer (1995). Voss and Schauble (1992:108–12) point out a direct link between interest and concentration. Therefore, the aim of the program was to make the learning as interesting as possible by varying the learning and the strategies provided. Daily learning is never of one type. There are always listening exercises with new text that complement the daily exercises. In addition, there are always a variety of strategies employed, for which section 4.3.3.1 provides an example.

4.3.5.4 “*Quiz Myself or Have Others Quiz Me*”

This strategy is closely related to review; however, to turn the review into quizzing, a slight change was introduced into the flashcards. In the initial learning session, learners saw a list of the words being learned on a particular day before they saw them in flashcard format. This was intended so that the initial learning session would involve recall. However, in the review sessions, the learners did not see the lists first, so that the entire review session involved recall. Learners were also encouraged to study with a friend (though the case study learner for the research in Chapter 5 studied alone). The following is from Week 7 of the program:

Helpful tip - If you have the opportunity, try to use this program with a friend. Studying with a friend can be helpful in several ways: 1) You may think of strategies together that will help the vocabulary to stick in your minds, 2) You can hold one another accountable, so that you do not fall behind, and 3) You will probably enjoy your study more in a group. An enjoyable atmosphere will facilitate your learning.

4.3.5.5 “*Break Lists into Smaller Parts*”

A certain amount of emphasis was placed on this strategy in Chapter 2. It was included by taking the lists of items from section 4.2.2 and spreading them out over the course of the entire semester. They were broken down in accordance with the suggestions from Miller (1956), Lewis (1997), and Carter,

Hardy, and Hardy (2001), namely between five and nine items should be studied at one time. Normally learners focused on no more than seven new items on a given day, though they did have more items for review. However, on some days when they focused on semi-productive and irregular forms, they may have had nine items, which is in accord with the upper limits of Miller's research (1956). Yet the irregulars and semi-productives were not completely "new," since the root forms had already been studied. These items were more a matter of association. This was a very simple strategy to incorporate with potentially dramatic results (Carter, Hardy & Hardy 2001); thus, it was chosen as an important strategy for the testing to be done in Chapter 5 of this study. For an example of what the seven items at one time looks like, see the screenshot in section 4.3.2.3 above.

4.3.6 Visual/Auditory Strategies

This category provides a varied group of strategies, some of which do not seem either visual or auditory, namely "Give myself reward or treat." The inclusion of several of these strategies was relatively simple; however, the use of reward was somewhat difficult to incorporate due to several limitations. The issues will be discussed below.

4.3.6.1 "Arrange Words on Page to Form Pattern"

Arranging words in a pattern would seem like a relatively simple strategy to incorporate; however, due to the limitations of the HTML editor that was used to develop the program, it proved more difficult than expected. There were two reasons for this. First, the program would not accept traditional spacing of the items on the page by simple use of the spacebar. When a significant number of spaces were inserted, the HTML editor removed them and placed items side-by-side. Thus, any spaces included on the pages of the program were achieved by including dashes (i.e., "-") and changing the font to white to match the background of the program.

Second, attempted shapes were not rendered as designed when tested with a number of web browsers. Therefore, a concession had to be made for this strategy in the web-based version of the program. The strategy was included by placing lexical items in tiers. Recall from section 2.2.6, Schmitt's (1997:213) finding was that placing all the items in columns was problematic. Thus, the use of columns was avoided, while placing the items in more complex patterns also had to be avoided because of the HTML editor limitations. The strategy was better implemented in the written workbook format, where learners were instructed to arrange words in a variety of shapes on the pages (see the workbook at <http://biblicalhebrewvocabulary.com/> – a link to the paper-based workbook is on the homepage).

4.3.6.2 "Draw Pictures of New Words"

As with the previous strategy, the use of the HTML editor played a role in the implementation. There was really no way to allow learners to "draw" a picture related to the meaning of the items. However,

the inclusion of an image can be helpful to learners, regardless of whether or not the student actually draws it (Paivio & Desrochers 1981). Therefore, this strategy was included in a way similar to a number of the other strategies. On the meaning page, a link was placed in the strategies section and labelled “picture.” When this link was clicked the learner arrived at a page with a picture that was culturally relevant. The following screenshots give an example of this strategy from the meaning page of the BH word אֶרֶץ (“land, earth”):

Figure 23. Screenshot - Use a Picture (Example 1)

Land, earth

וְאֶרֶץ הַגִּלְעָד
And the **land** of Gilead

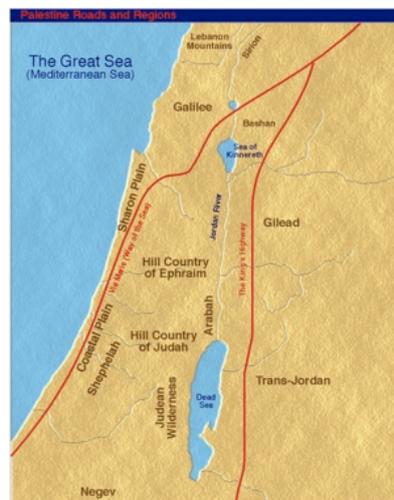
אֶל-הָאֶרֶץ אֲשֶׁר אֶנְכִּי נֹתֵן לָהֶם לְבְנֵי יִשְׂרָאֵל
to the **land** which I am giving to them
to the children of Israel

וְאֵלֶּה אֲשֶׁר-נָחֲלוּ בְנֵי-יִשְׂרָאֵל בְּאֶרֶץ כְּנָעַן
And these are what the children of Israel
inherited in the **land** of Canaan

Strategies:

VR 1	VR 2	VR 3	Keyword	Physical action
Personal experience	Pantomime/gesture	Real object	Picture	

Figure 24. Screenshot - Use a Picture (Example 2)



The אֶרֶץ (land) of Israel

Image accessed at:
http://www.hope.edu/bandstra/RTOT/INTRO/INT_F2.JPG

4.3.6.3 “Give Myself Reward or Treat”

Among the strategies used in the program, this was the only one that was incorporated primarily outside of the actual vocabulary learning with the intention that the effect would be generalized. In Chapter 2, I noted a study by Cameron and Pierce (1994:384) suggesting that verbal reward was more beneficial than tangible reward. For the case study performed for this dissertation, the primary verbal elements of the program were the listening exercises and the lectures. The lectures seemed to be a more appropriate place to offer verbal encouragement and congratulations to learners for how far they had progressed in the study. Thus, the explicit inclusion of reward in the vocabulary program is lacking. However, to see how this strategy was incorporated into the lecture materials, one can listen to the end of Lecture 2 on the accompanying website (<http://biblicalhebrewvocabulary.com/>).

4.3.6.4 “Talk to Someone About Feelings”

This strategy was also somewhat difficult to incorporate in the present study. For the purposes of this study, the strategy was kept to individual feelings about the vocabulary learning. Although it might have proven useful for students to talk about their feelings in general, that approach might have led to unrelated discussions rather than to vocabulary learning. Instead, the strategy was incorporated by statements like those in the preceding subsection (4.3.6.3) and also by the following:

Vocabulary: After two weeks of study, do you have a favorite type of strategy? My favorite is the keyword (though Hebrew words do not always sound like English words). Consider asking someone else who is studying with you which strategy works best for them.

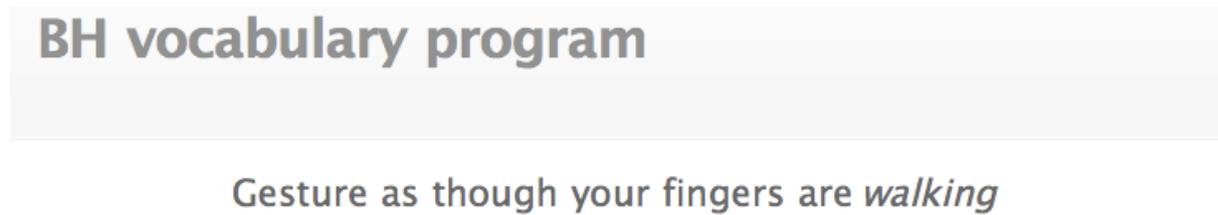
4.3.7 Strategies Involving Physical Action

Several strategies in this section have been discussed in previous sections, so I will simply direct the reader to the subsection where the strategy was discussed. For an explanation of the the overlap, see Chapter 2 (section 1.2.3).

4.3.7.1 “Use Pantomime and Gestures to Practice”

It is somewhat difficult to determine how pantomiming and gesturing differ from physically acting out new words. For these two strategies, I have included physically acting out new words in a general manner. In the case of **וַיֵּלֶךְ** (“he went, walked”) (see 4.3.2.2 for the example), the physical activity that was suggested was simply to walk around. I have included pantomiming and gesturing to mean more specifically the movements of either acting out a particular scenario (pantomiming) or using one’s hands (gesturing), rather than only a general suggestion. Thus, in the case of **וַיֵּלֶךְ**, the gesture that was suggested is demonstrated in the following screenshot:

Figure 25. Screenshot - Pantomime and Gesture (Example 1)



[Main menu](#) > [Week 7](#) > [Day 2](#) > [List](#) > [Cards](#) > [Meaning 1](#) > [Pantomime/gesture](#) >

The idea here was that the learner would make his or her fingers “walk,” as though someone had asked them if they were walking or driving, and they wanted to answer silently. The following screenshot demonstrates the concept of pantomime used and is taken from the strategies for the word מלך (“king”):

Figure 26. Screenshot - Pantomime and Gesture (Example 2)



4.3.7.2 “Practice Word by Using Real Objects”

This strategy, like the preceding one, was easy to incorporate. On the meaning page, a link was placed in the strategies section, entitled “real object.” When this link was clicked the learner, arrived at a page that suggested they tape or mark this word on some real world object. One example from the BH word for יום (“day”) was to tape or write the word on a calendar. Another example was to write the BH words for “to” and “from” on an envelope in the locations for the recipient and the sender, respectively.²⁸

4.3.7.3 “Physically Act Out New Words”

See section 4.3.2.2 above.

²⁸ In research done subsequent to the development of the program set out in this chapter, I have noticed that a number of popular level modern language books provide learners with stickers that can be placed on real world objects. This should be considered in future versions of the program developed here. A document laid out like postage labels could be included on the website for learners to print out. These labels could then be placed on the real world objects.

4.3.7.4 “Relate New Words to Myself”

See section 4.3.4.4 above.

4.3.8 Strategies Used to Overcome Anxiety

One of the strategies included in this section has been discussed previously (see section 4.3.6.4), and I will once again refer the reader to that discussion. The additional strategy in this section is another that was difficult to incorporate, though for different reasons that will be discussed below.

4.3.8.1 “Notice When Tense or Nervous”

As with most vocabulary learning, this program was developed so that learning could be done outside of a classroom. Therefore, there would be limited control over the environment. The way that this strategy was incorporated was by consistently reminding learners not to be too concerned if they did not get everything the first time because they would have plenty of opportunity to review. Also, for the purposes of this study, one of the factors that normally leads to a significant amount of anxiety was eliminated, namely testing. Thus, the need for this strategy was diminished to a significant degree. Learners using this program knew from the beginning that they would not be graded on their knowledge of the material, though there would be tests for experimental purposes.

4.3.8.2 “Talk to Someone about Feelings”

See section 4.3.6.4 above.

4.4 Summary

In this chapter, I performed two primary tasks. I determined which items would be learned in the new approach. This required a preliminary discussion of goals followed by selecting the individual words (*lemmas*), semi-productive forms, irregular forms and multi-word items to be learned. After selecting these items, I developed the new approach by applying the insights from Chapter 2. I explained the application of these insights deductively, though the computer-based and paper-based materials are available at <http://biblicalhebrewvocabulary.com>.

5. Testing the New Approach

5.1 Introduction

In the second chapter of this study, I examined the applied linguistics literature to determine what an approach to BH vocabulary acquisition informed by research in applied linguistics might consist of. In Chapter 3, I evaluated currently existing BH introductory materials to determine whether or not these materials implemented insights from the applied linguistics literature concerning vocabulary learning. Since the results of that evaluation were negative, it seemed that developing a new approach to BH vocabulary learning was warranted. That was the aim of Chapter 4 of the present study.

The current chapter consists of experiments that I ran in order to determine whether there is reason to believe that the approach developed in Chapter 4 may work better than currently existing approaches in BH instructional materials. Here I will discuss two types of testing that I performed. Each type focused on different aspects of the vocabulary program. For those aspects of the program that are not often included in other instructional materials, namely implicit learning exercises, I performed a small-scale case study. To test the capability of the new program to provide better initial memorization of form and meaning, I performed one larger-scale study comprising three experiments on one of the strategies used.

5.2 Case Study

Experimental case studies are commonplace in the psychological and applied linguistics literature; however, they may not be familiar to scholars of BH. Therefore, in this section, I will first discuss the necessity of a case study in the particular circumstances of this dissertation. Second, I will examine the precedent and purpose for case study research. After providing this foundation, I will report the case study in two parts: the language learner and the testing.

5.2.1 Logistical Considerations

The case study performed for this dissertation focused on aspects of the vocabulary program not often included in other BH instructional materials. For instance, it focused on the effect of the program on learning associations and on those aspects of the program that are best learned by a combination of implicit and explicit learning. I have claimed that vocabulary knowledge, such as grammatical behavior and collocation, can best be learned by a combination of these different types of learning. Due to the focus on implicit learning, the study needed to last a relatively long period of time. So it was designed to cover what might be taught in a 14-week semester course.

5.2.1.1 Necessity of the Small-Scale Case Study

Due to the nature and length of the study, there were two factors that made a small-scale study more reasonable than a large-scale one. The first was an ethical factor. In an ideal testing situation, one

could simply have applied the new vocabulary program in a 14-week university-level course in BH. Then, at the end of the 14-week course, students could have taken a test dealing with association, grammatical behavior, and collocation. In addition, the same test could have been given to another class that was identical, except that it did not employ the new vocabulary program. The results of the two testing groups could then be compared.

This seems easy enough; however, one must consider what might have happened if the vocabulary program had not worked. What if the vocabulary program had actually been detrimental to the learning of BH? What if the group not receiving the new vocabulary program performed better than the group that did receive the program? This could lead to a very difficult situation. Students (or parents of students) might feel cheated because they spent tuition money to participate in an experiment that did not work. Thus, there was need for a good precedent for applying the vocabulary program in a 14-week university course. There should be adequate reason to believe that a program works before introducing it in a course where tuition money is being spent.

Against this background, I would suggest that this part of the dissertation be viewed as a small pilot study for future research, rather than as an end in itself. I would envision a progression from this small case study using one person, to a larger pilot study using approximately ten students, and finally to a large-scale study using a considerable number of students. Only at this final stage, and given that the pilot studies provided significant confidence for employing the vocabulary program, should it be incorporated into a normal university course. This leads to the second justification for starting with a small-scale study. Performing the large-scale testing requires significant funding, beginning at stage two.

Hypothetically, one could skip the case study stage and begin with the second stage pilot study; however, a lack of funding made this problematic. An attempt was made to gather a large number of volunteers to take an elementary-level course in BH. This was duly accomplished, but the course ultimately failed. First, the study was too long for a typical experiment. Second, the study required a significant time commitment from the subjects each week. Third, students would obtain no college credit for the course. Lastly, students had no financial investment in the course. Since the expectations placed on students were very high, to mirror the expectations from a normal university course, and since they were taking the course only as a matter of interest, it became very easy for them to withdraw since it cost them nothing financially. Sufficient funding for the testing could have changed this scenario. A fourth, and very important, factor leading to the failure of the course could have been averted. If students had been paid for their participation in the course, I believe there would have been a much higher retention rate. At this point, I hope that this case study might merit consideration for funding so that a reasonably sized pilot study could be pursued.

5.2.1.2 Precedent and Purpose for Small-Case Study

The small-scale case study is not necessarily chosen simply for the sake of expedience in the applied linguistics literature. There is a significant precedent for this type of study, perhaps as a result of the

same type of ethical and fiscal considerations stated above, though the authors are not explicit in this regard. In the book *Second Language Vocabulary Acquisition*, three case studies are reported (Coady & Huckin 1997:53–124). Two of these three case studies used only one subject each, whereas the third used two subjects. Moreover, Grabe and Stoller (1997) list six other studies as a precedent for their own case study. Therefore, there seems to be ample justification for carrying out this type of research.

It is also important to draw attention here to the purpose and usefulness of a case study. As Grabe and Stoller note, the purpose of a case study is not to make “statistical generalizations” (1997:98). Statistical research is a highly quantitative type of research. In contrast, a case study is more qualitative. Though the numbers from a case study may not be as significant, one is able to get a great deal more insight into the mind of the language learner. The subject is able to provide valuable introspective data that would be impossible to gain from the greater number of subjects used in studies more focused on statistical observation.

The question remains as to how this type of research can be useful. In the present day, many researchers are interested in the question of whether one program is statistically better than another. However, this should not be the *only* focus of research on the proposed new vocabulary program, and a simple illustration should explain why. It is not difficult to imagine that one could develop a program that performs statistically better but is not enjoyable. Though the program may produce statistically better results, students are unlikely to use the program because it is monotonous or boring. A case study can be helpful in this regard. One not only finds the subject’s scores in a series of tests, but is also able to determine his or her overall feelings toward the program. Information gained from this introspection can help to determine whether or not students would use the program and might even lead to improvements. Aspects of the program that were not helpful or were not enjoyable can be retooled, so that they become more useful. Therefore, though case studies may not provide one with statistical generalizations, they can still be useful.

5.2.2 The Language Learner

Having examined the reasoning behind the case study approach, I will now report on the case study performed for this dissertation. This report will be divided into two main sections: the language learner and the testing. The present section on the language learner will be divided into three subsections focusing on the subject’s language learning background, the context for the present study, and the specific learning methodology. The information for these subsections was obtained through a free-response questionnaire. The subject was provided with general statements like, “Describe your language learning background,” and sample questions like: “What languages have you studied? For how long?” The answers to this questionnaire and the participation in the study as a whole were under the guarantee of anonymity. So, for the purposes of this study, I shall refer to the subject as A. N.

5.2.2.1 Subject's Language Learning Background

A. N. reported that she had studied French extensively and Spanish to a limited degree. Her French studies took place during primary and secondary schools in grades five through ten. She started studying Spanish using self-study CDs. She reported no university-level language study. In short, the subject's language learning background was not very extensive. Therefore, it does not seem that a positive outcome in the testing would have been a result of the subject simply being an experienced adult language learner. In addition, the languages studied, namely French and Spanish, are Romance languages and hence quite distinct from BH. Her background in these languages likely would not lead to more positive results than someone who had studied another Semitic language.

At a more introspective level, A. N. identified herself as a student who does not "learn languages easily." She noted two specific problems she had experienced, the first being the inability to recall. She stated: "If I keep current with studying, I can usually recall most of the material, but after a bit of time, I don't remember it." A second problem that she pointed out was her inability to pay attention to detail. During the course of the study, she noted problems in learning the BH vowels and vowel changes. On the basis of the above findings, one may infer that a positive outcome for the case study would not have been simply the result of a "good language learner" studying BH.

5.2.2.2 Subject's Context for the Study

The subject's context for the study consisted of several important features. First, the subject was a volunteer; therefore, she had no financial commitment to the course (though she did receive a small stipend for the time spent in testing and for the time spent filling out the case study materials) and received no credit for the course taken. The course was taken mainly for its intrinsic value to the student. Second, the subject managed her study of BH while working on a university degree through a distance program. Therefore, at times it was necessary for the subject to devote more time to her degree related work. At other times, the subject was able to devote more attention to BH. Finally, the subject studied BH at a distance through the use of a DVD (The materials on this DVD have now been posted at <http://biblicalhebrewvocabulary.com/>). The DVD contained a web-browser-based learning program that included the vocabulary materials developed for this dissertation along with video lectures, a workbook with exercises, a number of alphabet exercises developed by me, and some developed for free use by Esther Raizen at the University of Texas at Austin.¹ Additionally, I served in the role of a tutor while the subject worked through the DVD materials. If she had questions, she sent them by e-mail and received responses in the same manner.

Considering the context in which the study was conducted, one may safely infer that the student's motivation arising from the intrinsic value of the project may have been the main factor that led to a positive outcome. Moreover, with no credit received for the course, extrinsic motivation would have

¹ These materials are included on the website accompanying this dissertation — <http://biblicalhebrewvocabulary.com>.

been minimal. The splitting of time between learning BH and pursuing a degree had the potential for influencing the study negatively since it might have been hard to keep a regular schedule. Studying at a distance was likely to be a neutral factor, as it only meant learning BH in a setting the subject was accustomed to.

5.2.2.3 Specific Learning Methodology

The specific learning methodology for the subject was outlined on the course DVD. I will discuss both the layout of the course on the DVD and the subject's use of the DVD, as she was unable to follow everything exactly. The course was meant to mirror a 14-week, first-semester course in BH at the University of Stellenbosch, though the time requirements for an actual university course may be more extensive. The time requirements for this study were kept at a minimum in order to focus on retention. Since the subject was a volunteer, too high a demand on time might have led to her dropping out of the study. A description of the DVD course is as follows. The 14-week course was divided into two main parts. Weeks one through five focused primarily on the learning of pronunciation and cultural background, though other material was also included. Weeks six through fourteen focused primarily on the learning of vocabulary, though grammatical and cultural material were also included. I will discuss each of these parts in more detail.

In part one, weeks one and two focused explicitly on the consonants and vowels. They were treated through lectures, interactive exercises, and listening exercises. After that, the learning of pronunciation was reinforced in a period during which the subject spent a significant amount of time listening to videos containing slowed down portions of the Book of Joshua and continuing interactive exercises. During this period, the subject also focused on cultural background through workbook readings and exercises. The rationale behind this approach was that pronunciation is difficult for adult learners to handle, whereas cultural background is more manageable (Hyltenstam & Abrahamsson 2003). Thus, the student was eased into one difficult aspect of the language (i.e., pronunciation) while learning a more manageable aspect of the language (i.e., culture).

In the second part of the course, the subject focused more on vocabulary learning, though some grammar and cultural information were also required. The grammar (nouns and adjectives, prepositions, conjunctions, construct state) was incorporated through video lectures and videos that guided the subject through workbook exercises. The cultural material was continued through workbook readings and exercises. Some of these exercises were diglot weaves that could have also contributed to vocabulary learning. The vocabulary learning followed the program developed for this dissertation.

In weeks six through nine, the subject studied 84 individual items meant to move her toward a 95% text coverage for the Book of Joshua, and she completed listening exercises meant to give exposure to the vocabulary (see section 4.2.2.1). In weeks ten through twelve, she studied semi-productive forms and multi-word items meant to move her toward 95% text coverage for Joshua, and she continued the listening exercises. Finally, in weeks thirteen and fourteen, the subject began doing matching and

category exercises meant to establish links between words, while continuing the listening exercises. Throughout this entire process, the subject completed strategically placed reviews and was provided with a considerable number of strategies for remembering the meanings of the words (see section 4.3). In terms of A. N.'s use of the DVD, a few notes should be made. A. N. acknowledged that she spent more time during the first two weeks focusing on consonants and vowels than most of the other weeks of course material, making sure she knew the forms of the consonants and had a grasp of the vowels. The requirement of time may have been increased because there were different fonts used in different exercises. For instance, Raizen's exercises use a font that looks quite different from the ones used in the lectures and in the workbook.² She also admitted that she was unable to follow the schedule exactly. For example, the learning was divided into four days a week for fourteen weeks, but, due to her other degree requirements, she sometimes had to do the material meant for two days of study in only one day. She also had some overlap in weeks. In other words, she may have done a little more than one week of course work in an actual calendar week. In addition, she took some time off for Christmas break; however, this does not appear to be much of a problem because university students do get breaks in a semester. In general, however, her description of how she used the program does not seem to suggest that it would have caused either a more positive or a more negative result. A typical university student must sometimes go at different paces in accordance with the requirements for different courses, which vary significantly from time to time.

5.2.3 The Testing

For the purposes of this study, I decided that two testing sessions would be necessary. In Grabe and Stoller (1997), four testing sessions were used; however, the study was considerably longer, twenty-one weeks, and the subject was tested for prior knowledge in the first test. In this case study, no prior knowledge was assumed since the student had no previous contact with BH or any other Semitic language. The first test was given after week seven (i.e., midway through the course) in order to get something resembling a baseline. Since the tests would focus on association, grammatical behavior of verbs, and collocations, which the subject had not yet studied, it was assumed that the baseline score would be around chance level.

Since there are no batteries of tests for BH, the tests for this case study had to be newly developed. The test questions were developed based on the relevant section in Nation (2001:344–79) dealing with how to test different types of vocabulary knowledge. This dissertation has focused on receptive knowledge of BH rather than productive knowledge due to the fact that communication in BH may not be a useful skill. Therefore, the questions are related to how Nation (2001:344–79) proposes to test for receptive knowledge of associations and grammatical behavior. The questions on association were multiple choice, with the subject being asked to circle the BH word most closely related to the testing item. Those on grammatical behavior gave the subject two phrases or sentences (including

² The font that Raizen uses for her exercises can be viewed here: <http://www.laits.utexas.edu/hebrew/heblang/tutorials/b1tutor/new/index.html>

sound recording) with one sentence or phrase being correct and the other incorrect. The student was required to mark the sentence that sounded correct. Those dealing with collocation were also multiple choice questions in which the student was instructed to circle the BH words that often join with the testing items. It may not be clear what these questions would have looked like because they are not the types of questions BH instructors are accustomed to asking. Therefore, the first test for the case study has been included below as an example.

Table 10. Case Study Test 1

Associations – Circle the Hebrew word most closely related to the numbered item. Associations can be synonyms (hard/difficult), antonyms (good/bad), grammatical (masculine/feminine), semantic domain (nurse/doctor), etc.

1. לֹא	A. אֵת	B. אֵל	C. בָּה	D. בַּת
2. זָה	A. בָּה	B. פְּנָה	C. אִשָּׁה	D. זֹאת
3. אֵל	A. מִן	B. נָתַן	C. שִׁים	D. אַחֲרַי
4. מְלֶךְ	A. מִים	B. שָׁם	C. עָבַד	D. אֵין
5. רָאָה	A. כֹּל	B. אֶרֶץ	C. שָׁמַע	D. הָיָה
6. יָד	A. מוֹת	B. פְּנָה	C. כִּי	D. אִם
7. עַל	A. בְּ	B. עֵין	C. אֶכֶל	D. מוֹת
8. אֲנִי	A. אַחַד	B. מֵאָה	C. שְׁנַיִם	D. אַתָּה
9. שָׁנָה	A. הֵם	B. אֵלֶּה	C. יוֹם	D. מָה
10. דֶּרֶךְ	A. אֵלֵהֶם	B. עִיר	C. אֵח	D. כְּהֵן

Grammatical behavior – Listen to these pairs of sentences in Hebrew, and circle the letter of the sentence you believe is correct. Listen to each at the following website: <http://homepage.mac.com/jthom18/soundfortest/>

1. A. וְהָיָה בְּאֶשְׁר־תִּמּוּ כָל־הַגּוֹי
 B. נִיחָי בְּאֶשְׁר־תִּמּוּ כָל־הַגּוֹי

2. A. וַיֹּאמֶר יְהוָה אֱלֹהֵי-הוֹשֵׁעַ בֶּן-נוּן
B. וַתֹּאמֶר יְהוָה אֱלֹהֵי-הוֹשֵׁעַ בֶּן-נוּן

3. A. וַיַּעַשׂ יְהוֹשֻׁעַ כֵּן
B. וַיַּעֲשֶׂה יְהוֹשֻׁעַ כֵּן

4. A. אֲשֶׁר אָנֹכִי נֹתֵן לָהֶם לְבְנֵי יִשְׂרָאֵל
B. אֲשֶׁר אָנֹכִי נֹתֵן לָהֶם לְבְנֵי יִשְׂרָאֵל

5. A. וַיְהוֹשֻׁעַ זָקֵן בָּאָה בַּיָּמִים
B. וַיְהוֹשֻׁעַ זָקֵן בָּא בַּיָּמִים

6. A. בְּכֹל אֲשֶׁר תִּלְדֶּךָ
B. בְּכֹל אֲשֶׁר תִּהְלָדְךָ

7. A. וַיֵּשְׁבִי גְבֻעוֹן שָׁמַע
B. וַיֵּשְׁבִי גְבֻעוֹן שָׁמְעוּ

8. A. וְאַתֶּם רְאוּתֶם
B. וְאַתֶּם רְאִיתֶם

9. A. בְּאֲשֶׁר דִּבֶּר יְהוָה אֱלֹהֵי-הוֹשֵׁעַ
B. בְּאֲשֶׁר דִּבֶּר יְהוָה אֱלֹהֵי-הוֹשֵׁעַ

10. A. וַיֵּשְׁבוּ בְּאֶרֶץ
B. וַיֵּשְׁבוּ בְּאֶרֶץ

11. A. עֲדֹשְׁבוּ הַרְדָּפִים

B. עֲדֹשְׁב הַרְדָּפִים

12. A. וְאַלֶּה יֵצְאוּ מִן־הָעִיר

B. וְאַלֶּה יֵצֵא מִן־הָעִיר

13. A. וַיִּלְקַח יְהוֹשֻׁעַ אֶת־כָּל־הָאָרֶץ הַזֹּאת

B. וַיִּקַּח יְהוֹשֻׁעַ אֶת־כָּל־הָאָרֶץ הַזֹּאת

14. A. אָתָּה יָדַעְתָּ אֶת־הַדָּבָר

B. אָתָּה יָדַעְתָּ אֶת־הַדָּבָר

15. A. וַיָּקוּם יְהוֹשֻׁעַ וְכָל־עַם הַמֶּלֶךְ חָמָה

B. וַיָּקָם יְהוֹשֻׁעַ וְכָל־עַם הַמֶּלֶךְ חָמָה

16. A. וְהָעַם עָלוּ מִן־הַיַּרְדֵּן

B. וְהָעַם עָלָהּ מִן־הַיַּרְדֵּן

17. A. וַיִּשְׁלַח יְהוֹשֻׁעַ אֲנָשִׁים מִירֵיחוֹ

B. וַאֲשַׁלַּח יְהוֹשֻׁעַ אֲנָשִׁים מִירֵיחוֹ

18. A. אָתָּם אֲכַל

B. אָתָּם אֲכָלִים

19. A. וַיִּקְרָא לָהֶם יְהוֹשֻׁעַ

B. וַיִּקְרָא לָהֶם יְהוֹשֻׁעַ

20. A. נִישְׂאוּ אֶת־אֲרוֹן הַבְּרִית

B. נִישְׂאוּ אֶת־אֲרוֹן הַבְּרִית

Collocations - Circle any Hebrew word that frequently combines with the boxed word. The questions are moving from right to left like typical Hebrew. For example, in the first question, if you circle שֵׁם (A) this means that you believe it normally precedes אָב (1). In other words, the collocation is:

←
שֵׁם + אָב

There are in total 20 correct answers (five questions have 1 correct answer, three have 2 correct answers, and three have 3 correct answers). So, you should have a total of 20 words circled.

1. אָב	D. חָרַב	C. יָד	B. אֱלֹהִים	A. שֵׁם
D. אֲרִיז	C. אָחַד	B. אֲשֶׁר	A. עִם	2. כָּל
3. אֵל	D. וַיִּלָּךְ	C. וַיָּשָׁב	B. וַיִּמַּת	A. וַיְדַבֵּר
D. אֲשֶׁר	C. עִם	B. עַל	A. בְּ	4. וַיַּעַל
D. בְּיָוֵם	C. מֵאַחֲרַי	B. עַד	A. עִם	5. לְשׁוֹב
D. בְּ	C. בְּיָוֵם	B. אַחֲרַי	A. כִּי	6. וַיְהִי
7. מִן	D. וַיִּבֹא	C. וַיֵּצֵא	B. לָקַח	A. וַיְדַבֵּר
8. כִּי	D. וַיֹּאמֶר	D. וַיִּדְעוּ	B. וַיִּלְכוּ	A. וַיַּעַשׂ
9. לֹא	D. אִם	C. עַל	B. הֵן	A. אֵל
10. כִּנִּי	D. אֵל	C. לְ	B. מִן	A. אֵל
D. שָׁמַע	C. עָשָׂה	B. אָמַר	A. דִּבֶּר	11. כֹּה

Having provided an idea of what the testing materials looked like, I will now discuss the procedures and results of the test. Finally, I will conclude this section with an analysis of the participant's subjective response to the vocabulary materials.

5.2.3.1 *Testing Procedure*

The testing was done relatively informally. Since the subject moved through the material in a semi-self-paced way, she informed me when she was finished with week seven and week fourteen. When she informed me that she was at the mid-course point, and then at the end of the course (i.e., weeks seven and fourteen), I sent her the tests electronically. Also, the tests directed the student to a web page that contained sound recordings for the second section of the tests. She was informed that her test scores would be anonymous. Since she knew well that it was merely for the purpose of testing and not for any grade, the subject had no reason to be academically dishonest. From the answers she gave in the test, it seems clear that the tests were taken in earnest. In addition to having the electronic copies of the tests, I also made myself available for any questions that the participant might have had during the testing. During test one, the subject had questions about what to do on the grammatical behavior section; however, these questions were resolved without any problem, and the results appeared valid. The electronic version of the test was printed, and the subject recorded answers into a document that was then sent to me electronically.

5.2.3.2 *Testing Results*

The results of the test suggest that the vocabulary approach developed for this dissertation did have positive effects on the subject's learning of associations, grammatical behavior, and collocations. It was reasoned that the results of the first test would be around chance level and that the results of the second test would be somewhat better than chance.³ This was proved correct in the testing. In section one, there were ten questions in each test, with one answer out of four being correct.⁴ Therefore, the chance level on section one would have been around 2.5 correct answers. Section two contained twenty questions in each test, each with one correct answer out of two. Thus, chance level on section two would have been around ten correct answers. Section three had eleven questions in each test, with between one and three correct answers out of four for each question. The overall chance level for these questions would have been around nine correct answers out of twenty.

The actual results for the tests were as follows:

³ The chance levels for this study were based on "common sense" calculations, since there are no examples of the exact same types of tests in the applied linguistics literature. In other words, there is no battery of tests that is based on Nation's (2001:355–56) considerations of how to test for various types of vocabulary knowledge.

⁴ The content of the two tests was different.

Table 11. Case Study Test Results

	Test 1	Test 2
Association	40% (4/10)	100% (10/10)
Grammatical Behavior	30% (6/20)	80% (16/20)
Collocations	50% (10/20)	80% (16/20)
Overall	40% (20/50)	84% (42/50)

In every area, there were improvements; however, several of these areas deserve further discussion regarding the implications. Once again, it should be noted that these scores cannot be generalized. They apply only to one subject, and the testing might not have worked out well for students of different backgrounds and abilities. In the area of association, it is possible that improvement in the knowledge of associations might have been simply a result of knowing the meanings of the individual words. It is possible that the student had not previously made the associations between the words, but rather saw the words in the test and that was the point at which she made the association. In other words, the test might have been an exercise in association, rather than a demonstration that associations were known. In a single-subject case study, it would be impossible to determine if this were actually the case; however, in the subjective analysis below, it will be shown that the student believed the association exercises were helpful in this portion of the test.

Secondly, in terms of grammatical behavior, it should be noted that the student reported that she “guessed” in this section of the test. This was to be expected, because the grammatical behavior section was meant to test for implicit learning. The questions dealt with the behavior of BH verbs; however, the subject had received *no* explicit instruction about verbs. The only experience of verbs that she had was in learning the individual verbs and the multi-word items that were related to verbs, along with exposure to verbs in listening exercises. So, the grammatical behavior questions were meant to determine whether the student was able to infer the typical behavior of verbs from the multi-word items, and whether or not the listening exercises gave the subject a “feel” for how BH verbs act. In this regard, the results of the tests are interesting. Though the subject does report guessing in both tests, the guessing was far more accurate in the second test. Again, it is impossible to say with certainty that the vocabulary materials brought about these improvements. All that can be said is that one subject performed better in a second test on grammatical behavior — after completing the program — than in the first.

Finally, a few remarks are in order about the section referred to as “collocation,” which dealt with multi-word items in general. It was expected that the student would display improvements, but also that these improvements would be higher than the 80% she achieved. Yet it seems possible to give one reason why some of the items may have been missed. With this explanation, it may be possible to hypothesize that the vocabulary materials are on the right track, but that they can still undergo

substantial improvements. There does seem to be a common feature among several of the collocation questions missed in the second test. Of those missed, three deserve note. The first was $\text{כָּל} + \text{נֶפֶשׁ}$ (“every inner self/person”) and the second $\text{אָל} + \text{וְיָקָרָא}$ (“and he called to”). The common feature that might have made these items problematic is that both כָּל (“all, every”) and אָל (“to”) are involved in a significant number of multi-word items, especially אָל . It is quite possible that all of these items may interfere with one another. If this were the case, one way of dealing with the interference would be to space out more effectively the learning of the multi-word items involving these BH words. It is also interesting that three of the incorrect collocations that the subject created were אָב אֶרֶץ , אָל וְיַעַשׂ , and וְיַעַשׂ ה . In translation, these items would be “land of a father,” “and he did to,” and “and he did to,” respectively. It is possible to see these false positives as related to English, since the compound “fatherland” and the phrase “do to” are quite common. Since they sounded familiar to the student in English, she created the collocation in Hebrew. Thus, the instruction in multi-word items might benefit from research in how to guard against L1 transfer in language learning. Though the testing showed positive overall improvements, it is also possible to see how this testing could lead to further improvements.

5.2.3.3 Subjective Reflections of the Language Learner

Though the actual tests were important, what may be most helpful at this stage of the development of the vocabulary materials are the subjective reflections of the participant. As stated earlier, it may be possible to develop an approach that produces good results in testing that students might be highly unlikely to use, for example, if they find it uninteresting. The learner’s reflections were drawn out through requests such as, “Describe your feelings concerning the listening exercises.” The learner was also given leading questions like: “Were they helpful? Unhelpful? How could they be improved?” The questions were related to three aspects of the vocabulary learning materials that were intended to be involved in the testing, namely, the association exercises, the listening exercises, and the multi-word item exercises.⁵

With regard to the association exercises, the subject said that in general these exercises were “very helpful.” In particular, she specified three ways in which the exercises were helpful. The first and the second were that they helped reinforce the vocabulary and helped her note the relationships between words. These were the two functions intended for the association exercises when they were developed. There were brief statements to this effect in the vocabulary program, so it is possible that the subject’s statements were influenced by this. However, she did identify a third benefit of the

⁵ One may question why the student’s knowledge of the forms and meanings of the individual vocabulary words was not tested. However, this aspect of the vocabulary program was tested in the research done for the second part of this chapter. In addition, I would point out that the student’s knowledge of the individual vocabulary items was tested implicitly, since in order to answer the questions in sections 1 and 3, the student must have known the meanings of the words.

exercises. She stated that it helped to review the words in a different format. She noticed that in doing the association exercises she did not remember some of the words. She related not knowing the words to the fact that she might have memorized them in relation to their location in the previous exercises. Seeing the words in a different context helped to break the association with a particular location. The only problem experienced with these exercises was that it was necessary to look back to find the English meanings of the words because they were not included. Thus, the subject found the association exercises helpful, and her analysis could lead to improvements of these exercises and the “flashcards.” One possible improvement can be that the English meanings for the association exercises should probably be made more readily accessible. Also, in the preceding “flashcards,” the location of each item should be shuffled, so that words are not being learned by their location.

As for the listening exercises, this is where the subject offered the most negative assessment; however, this assessment could lead to a number of improvements. It should be noted that the subject rated the listening exercises as “interesting” because she was able to listen to a native speaker of Modern Hebrew. She also stated that once she knew a number of vocabulary words, it was helpful to see them being used and to attempt to find them in the listening exercises. Yet she did provide two important negative assessments. The first is that she would have liked to be informed more about the purpose behind the listening exercises. She did not really understand what she was supposed to be “listening for.”

It should be noted that for the purposes of this study, one of the intended functions of the listening exercises for students was realized. The listening exercises were intended to be found “interesting” material through which the learner would be exposed to significant portions of the language. However, it is clear that the exercises do require more explanation. Also, to give added meaning to the listening exercises, I now believe it would be helpful to mark the vocabulary items from the flashcards in some manner, for instance by highlighting them in different colors. This would have encouraged noticing, a practice promoted by researchers in vocabulary acquisition (Schmidt 1990).

Next, the subject stated that the reader spoke too quickly. At first, the speaker’s voice was slowed down significantly using Quicktime; however, by the end of the course, the students are listening to BH at normal speed. It would perhaps be beneficial to re-record the listening exercises at a slower pace, even if this means students are not exposed to as much BH. Thus, in short, the exercises were at least interesting, but could be improved in a number of ways.

Finally, a very positive evaluation was given to the learning of multi-word items. The subject stated the following: “I loved the phrases.” She even referred to them as “fun,” even though they were presented in much the same way as the individual words. And in the case of the association exercises, she stated that learning these phrases helped to “reinforce the vocabulary.” It is quite possible that learning the phrases was evaluated positively because the student was provided with material that was readily useful even before the learning of grammar. This presents an interesting situation for consideration in future editions of the vocabulary materials. Since the material was viewed as interesting, it would be possible to consider moving it to the beginning of the vocabulary learning. As

it stands, the phrases come after the individual words. This would mirror instruction in modern languages (e.g., modern language audio materials such as *Pimsleur*), where students often begin by learning stock phrases.⁶ The only issue would be that the positive effect of reinforcing the vocabulary might be lost. Also, these phrases may be more difficult to learn at the beginning, making them less enjoyable. Yet, it would be interesting to experiment with the placement of these items. I will discuss how this might be done in Chapter 6.

5.2.4 Conclusions

In this section, I dealt with the reasons why a case study was used to examine certain aspects of the vocabulary learning program. It also includes a report of the results of the case study. The overall results of the case study were positive. The vocabulary learning program led to improvements for the subject in knowledge of associations, grammatical behavior, and multi-word items. It is impossible statistically to say that these results can be generalized to other students; however, this case study may merit a future large-scale study in this regard. In addition to the positive results already achieved, it is possible to foresee how this case study could lead to important improvements that might produce even more positive results in the future. In the next section, I will report the results of three major tests that I have conducted to determine the value of at least one important part of the proposed new approach for fast initial memorization of vocabulary items.

5.3 Larger-Scale Study

I should begin by stating that the purpose of this larger study turned out more modest than originally intended. Initially, the purpose of this portion of the study was to determine whether the entire newly developed approach to vocabulary learning is better for initial memorization than currently existing approaches. However, through a process of trial and error, I recognized that there would be no way to test the entire approach developed in Chapter 4 for initial learning alongside currently existing approaches. The number of strategies incorporated into the new approach would make it impossible to isolate which of the strategies was responsible for improvements.

As an example, the new approach to vocabulary learning involves breaking lists into smaller parts, color-coding of flashcards, pictures, and the keyword technique among other strategies. Imagine running a test in which simple word lists like those found in most currently existing BH grammars were tested over against a color-coded set of flashcards broken down into smaller sets with images accompanying the meanings on the back side of the flashcards. The flashcards may indeed work better; however, how does one isolate what has led to the improvements? Is it the breaking down of the lists into smaller parts? The flashcards? The images? The color-coding?

This example, in fact, represents the type of testing attempted at first for this chapter. Too many variables were being tested at one time. And, despite the fact that a more enriched version of BH

⁶ See: <http://www.pimsleur.com/>

vocabulary learning generally worked better in experimentation, it was impossible to say which variable led to the improvements. Though there were problems with the experimental design of these earlier studies, they have been included in this chapter as an addendum (see section 5.6 and following). They do provide a bit of evidence concerning delayed recall. Only now, it is apparent that one would need to work incrementally toward the type of testing done there, one variable at a time. This will be discussed in some detail in Chapter 6 as an area for future research.

Against this background, the purpose of the experimentation done for this portion of the dissertation was not to demonstrate that the entire new approach to vocabulary learning developed in Chapter 4 works better than currently existing approaches for initial learning. Instead, there was a twofold rationale behind the testing. The first two experiments were intended to test only one of the primary strategies incorporated in Chapter 4, so that this might lead those who see the results of the experimentation to take seriously some of the other strategies incorporated there. The strategy chosen for the testing was breaking lists down into smaller parts. The reason for choosing this strategy was that it is very simple and could be fairly easily incorporated by both BH students and teachers alike if those who view the results of the testing believe that it would lead to improvements. It is also one of the strategies researched that I believed could have the most dramatic results, based on the study by Carter, Hardy, and Hardy (2001). The third experiment was performed to examine one of the assertions from earlier chapters, namely that word lists should be used on first exposure, rather than flashcards.

It is possible to give a general overview of the experiments since they were very similar. Indeed there was only one main changing element in each of the studies. The studies used a “within-subjects design,” which means that each subject participated in both parts of the experiment (Cotton 1998; all information concerning within-subjects design comes from this source). There are two advantages to the within-subjects design: (a) minimizing individual differences, and (b) getting two scores out of each subject rather than only one. Individual differences are minimized because each student’s score on the first part of the testing is being compared with his or her own score on the second part, rather than against someone else’s score. Deriving two scores from each subject reduces the total number of subjects needed for the testing. The disadvantage of the within-subjects design is called the “carryover effect.” One example of the carryover effect would be if subjects were fatigued after a first set of testing, and this caused them to perform poorly on the second part. Effects like these can be minimized by allowing breaks, or by performing the different parts of the testing on different days. The advantages of the within-subjects design appeared to outweigh the potential disadvantage.

Each experiment was divided into two parts. In the first two experiments, the variable from the first part to the second was the number of words studied at one time. In part one of the experiments, subjects were given twenty-one words to learn in fifteen minutes, followed by an immediate post-test. In part two, they were given twenty-one words broken down into three sets of seven. They were then given five minutes to study each set of seven words with each study session being followed by an immediate post test. The first experiment used word lists while the second experiment used

flashcards. In the third experiment, the variable that changed was the way in which words were presented. In both parts of the testing, subjects were given three sets of seven words; however, in the first part of the testing subjects used word lists and in the second part flashcards.

For all three experiments, delayed post-tests were given one week later to see which of the approaches was better for delayed recall; however, subjects were not expected to perform very well overall on the delayed post-tests. For instance, in one experiment reviewed for this dissertation (Carter, Hardy & Hardy 2001), students using an approach bearing some similarity to the one developed in this study remembered only about five out of twenty-one words. Those five words were remembered with twenty-one minutes of study, rather than the fifteen provided in this study. The subjects were also more advanced learners who already knew several of the words before even being tested. In sum, advanced students who already knew some words and had more time to study remembered fewer than two out of every seven words on a delayed post-test. With this in mind, I had very low expectations for the delayed post-tests for this study, since I was testing elementary learners with less study time. (In light of the Carter, Hardy, and Hardy [2001] study among others, in this study, it was suggested that the best approach to long-term retention is strategically spaced review).

Before beginning the report of the experiments, I should make one final initial observation: this testing does not actually mirror the approach developed in Chapter 4, where students never learn more than seven new words at one time. In this testing, students learned twenty-one words in fairly quick succession *even when* they were divided into three sets of seven. This was required for one important reason, namely to keep the number of words the same in both parts of the testing. In the addendum, I performed experiments in which I tested twenty-one words in fifteen minutes versus seven words in five minutes. In other words, I tested the number of words remembered out of seven per five minutes of study. I did this because having subjects learn only seven new words at one time actually mirrors the new approach developed in Chapter 4 more closely. Yet this does leave a disparity in the testing. It is impossible to say how well subjects studying seven words at one time would have held up over three learning sessions. In other words, if students remembered seven out of seven words in this testing, they would not necessarily have remembered seven out of seven words if asked to complete the task two more times. This disparity will not be an issue here since the number of words is the same in both parts of the experiment, namely twenty-one. Yet one must keep in mind that having students learn twenty-one new words at one time is *never* intended in the new approach, even though subjects needed to do so using three sets of seven in rapid succession for this testing. For this reason, I do not believe the testing included in the addendum is completely without value. If one would like to see some example results from testing that mirrored the new approach somewhat more closely, one can look at the experiments in the addendum, though it is impossible to tell for certain which variable might have led to improvements.⁷

⁷ In addition, one can also look at this testing to see results from some other commonly used approaches to BH vocabulary learning, such as the use of word list plus audio. These results may still be valuable even if the comparisons do not hold.

5.3.1 Experiment # 1

The first experiment compared the use of shorter word lists with the use of longer word lists. Word lists containing upwards of 15–20 words are common in currently existing BH vocabulary materials and grammars (Landes 2001; Mitchel 1984; for specific examples, see Pennington 2003:6–7,11–12,39–40; Van Pelt & Pratico 2001:36,204,324–25; and Kittel, Hoffer & Wright 2005:21,28,387–391). However, in the research from Chapter 2, it was suggested that using shorter word lists is more beneficial for learners. This notion was incorporated as an overarching strategy in the new approach developed in Chapter 4, with word lists limited to no more than seven new vocabulary items at one time. Limiting lists to seven items was in response to research by Miller (1956), Lewis (2002) and Carter, Hardy, and Hardy (2001).

5.3.1.1 Methodology

A short overview of the testing has been given above; therefore, the methodology for the first experiment can be summarized briefly. Twelve subjects in a second-semester introductory course in BH participated in the experiment. It employed a within-subjects design; therefore, each subject participated in both parts of the two part experiment. In part one, subjects were given a word list consisting of twenty-one words with fifteen minutes to learn them. After the fifteen minute learning session, the subjects took an immediate post-test containing all twenty-one words. The immediate post-test was followed by a delayed post-test one week later.

In part two, subjects were again given twenty-one words with fifteen minutes to learn them. However, the learning session was divided into three segments of seven words each, and the students were given five minutes to learn each group of words. The subjects received an immediate post-test containing all seven words from that learning session after each five minute time span with identical delayed post-tests being given one week later.

5.3.1.2 Results

To determine the results of the study, a paired t-test was run on the scores from the immediate and delayed post-tests. The scores from the immediate post-test were as follows:

Table 12. Immediate Post-Test Scores for Experiment 1

Row	List of 21 Words	3 Lists of 7 Words
1	3	14
2	13	21
3	8	17
4	13	16
5	12	18
6	8	15
7	12	13
8	15	20
9	12	13
10	6	9
11	9	18
12	21	21

The score in each column represents the number of items correct out of twenty-one for each of the parts of the testing. When these scores were entered, the steps for running the paired t-test in StatCrunch were fairly simple. In the top menu “Stat” is chosen, followed by “T statistics,” and then “Paired.” A dialogue box pops up and “List of 21 Words” is chosen as “Sample 1” along with “3 Lists of 7 Words” as “Sample 2.” After clicking “Next,” the box under “Hypothesis Test” is clicked. The option “<” is chosen, which means that I am hypothesizing that the scores in Sample 1 (i.e., “List of 21 Words”) are going to be lower than the scores in Sample 2 (i.e., “3 Lists of 7 Words”) in a way that is above chance probability. Finally, “Calculate” is clicked to see the statistics. The results of the paired t-test were as follows:

Table 13. Immediate Post-Test Results for Experiment 1

Options					
Hypothesis test results:					
$\mu_1 - \mu_2$: mean of the paired difference between List of 21 Words and 3 Lists of 7 Words					
$H_0 : \mu_1 - \mu_2 = 0$					
$H_A : \mu_1 - \mu_2 < 0$					
Difference	Sample Diff.	Std. Err.	DF	T-Stat	P-value
List of 21 Words - 3 Lists of 7 Words	-5.25	1.0525942	11	-4.987677	0.0002

The key value in this dialogue window is the “P-value.” A P-value of 0.05 or less is considered to be statistically significant. The P-value for this test was 0.0002, making it highly significant.

In a similar manner, a paired t-test was run on the scores from the delayed post-test. The scores from the delayed post-test were as follows:

Table 14. Delayed Post-Test Scores for Experiment 1

Row	List of 21 Words	3 Lists of 7 Words
1	1	1
2	1	0
3	3	0
4	1	0
5	1	0
6	1	0
7	0	0
8	1	0
9	2	0
10	2	1
11	1	0
12	1	1

The same procedure was employed in StatCrunch with the following results:

Table 15. Delayed Post-Test Results for Experiment 1

Options					
Hypothesis test results:					
$\mu_1 - \mu_2$: mean of the paired difference between List of 21 Words and 3 Lists of 7 Words					
$H_0 : \mu_1 - \mu_2 = 0$					
$H_A : \mu_1 - \mu_2 < 0$					
Difference	Sample Diff.	Std. Err.	DF	T-Stat	P-value
List of 21 Words - 3 Lists of 7 Words	1	0.24618298	11	4.0620193	0.9991

It actually appears as though there is a statistically significant result going in the opposite direction. In other words, the longer word lists led to better delayed recall. These results will be dealt with in the discussion section below.

5.3.1.3 Discussion

For the immediate post-tests, subjects performed better in a statistically significant way with the word lists broken into smaller parts than they did with the longer word list. In fact, the results were rather dramatic. Subjects remembered on average 11 out of 21 items when using the longer word list, while remembering on average 16.25 out of 21 items using the word lists broken into smaller parts. If one were to think about this in terms of time saved, the subjects would have learned approximately the same number of items in ten minutes using broken down word lists than they did using the longer list for fifteen minutes. I will discuss below how this extra time saved could be shifted toward more time for review. Whereas five subjects learned less than ten words using the twenty-one word list, only one subject learned less than ten words using the shorter word lists.

This test is in line with Miller’s (1956) research on the limitations of memory. In addition, this test provides one more important piece of information. It does not appear that subjects naturally break lists down into smaller parts on their own. If this were the case, one would expect similar results on the immediate post-tests for both parts of the experiment. This is an important point for instructors

who might like to incorporate this strategy, namely, students may not know how to use VLSs on their own without prior instruction. Thus, it appears that the shorter lists were better for faster initial learning, though this does not suggest anything about long-term memory.

This leaves the results of the delayed post-tests. As noted above, the longer word list actually produced better results on the delayed post-test. This was contrary to the hypothesis that the shorter lists would perform better in the delayed post-test as well. Therefore, some explanation is in order. First, I should note that neither one of the approaches produced very good results for the delayed post-test. The subjects did perform better with the twenty-one word list in the delayed post-test; however, they only remembered on average 1.25 out of 21 words. This is not a very positive result, even though the score is higher than when the students were using the three sets of seven. Second, I should also point out that a delayed post-test one week after initial learning is somewhat irrelevant for the full approach developed in Chapter 4 of this study. The reason for this is that students are never intended to go a full week between initial learning and their first review of an item. For example, in the approach developed in Chapter 4, vocabulary items are always reviewed the day after they are learned (see section 4.3.5.2).

With these two preliminary points in mind, the results of the delayed post-tests are actually in line with the research done in Chapter 2 of the present study, though this was not anticipated in the hypothesis for this testing. There it was suggested that the best way to move items to long-term memory was strategically spaced review. Thus, there is perhaps no strategy that used once during initial learning is going to produce very good results for a delayed post-test. Yet this still leaves the question why the twenty-one word list produced better, though by no means stellar, results on the delayed tests.

The answer to this question appears to be available in research on reviewing and forgetting. Considering the idea that spaced review leads to better long-term retention, I would suggest that the better results using the longer word list has to do with this approach making use of some of the benefits of spaced review. One might ask: How in a fifteen minute learning session would the twenty-one word list have made use of the benefits of review? This question raises two related issues: How long after an initial learning would further study need to be in order to be considered *review*? And, how quickly do people forget material, such as vocabulary. According to the Pimsleur scale for spaced review, language learners should review as early as only seconds or minutes after an initial learning (Nation 2001:78). This suggestion appears somewhat arbitrary. However, when one considers the psychological material on forgetting, it becomes clear that this suggestion is not very far off the mark.

It is not difficult to immerse oneself in the psychological literature on *memory* and overlook the research on *forgetting*. Yet this research is essential for the purpose here. Research on forgetting stems back to Ebbinghaus, who experimented on himself and proposed a “forgetting curve.” He suggested that the forgetting curve went down sharply after an initial learning and then leveled out (Schacter 2001:14–15). Schacter, currently one of the leading researchers on forgetting, remarks as

follows on Ebbinghaus' claim: "His conclusion that most forgetting occurs during early delays, and then slows down at later ones, has been replicated in countless laboratory experiments" (14). The question remains just how quickly this forgetting takes place. Schacter also cites studies from the 1950s demonstrating that forgetting can often take place in as little as twenty seconds (27). Thus, the answer to the question of whether Pimsleur's suggestion of reviewing after only seconds or minutes actually constitutes *review* appears to be "yes."

In light of this, it is not difficult to understand how the list of twenty-one words may have made use of the benefits of review. Most people can keep anywhere from five to nine items in working memory, with the average being seven (Miller 1956). With a list of twenty-one words, subjects would obviously be studying more than could be handled by working memory. As the subjects studied the 10th, 11th, 12th . . . words, this would have pushed the earlier items out of working memory. When subjects went back to the earlier words, perhaps after making it to the end of the list, this would have constituted review. Thus, the proposal followed throughout this dissertation that spaced review leads to long-term retention still stands. What remains to be considered is whether one could devise a way to make use of the advantages displayed by both the new approach for faster initial learning and the longer set of words for better long-term retention.

I will discuss more fully how this might be done in the next paragraph; however, I will now direct attention to some of the evidence in the addendum, though it may be impossible to tell what exactly led to a better result. In the second experiment in the addendum (see section 5.6.2), the use of a small set of enriched flashcards did produce results on a delayed post-test similar to those of a longer word list like the one used in the experiment currently under discussion. In addition, enriched flashcards produced better results than a longer word list accompanied by an audio recording (see section 5.6.1). The point here is that there may be some evidence to suggest that there are ways to benefit from faster initial learning without losing anything in terms of long-term retention.

Further, I can think of a simple way of maintaining the advantages of breaking down lists and reviewing only minutes after initial learning. First, I should note with regard to the new approach that after the daily explicit vocabulary learning (i.e., flashcards), students do a listening exercise (see screenshots in section 4.3.2.1). It was one of the goals of these listening exercises that they would provide review as students encountered words in genuine contexts. However, it would have complicated matters a great deal if these exercises had been incorporated into this testing. Yet, these listening exercises could also offer an opportunity for explicit review only minutes after initial learning. To maintain the advantages of both breaking lists into smaller parts and review very shortly after initial learning, one would simply need to include a brief review of the daily vocabulary words at the end of the listening exercises. As it stands, the daily vocabulary exercises employ the following pattern: word list and flashcards for new words, listening exercise, and review of words from one day and one week before. The new set of vocabulary exercises would be word list and flashcards for new words, *listening exercise with review of the day's new words at the end*, and review of words from one

day and one week before. Students would then be reviewing vocabulary on the day of initial learning, on the day after, one week after, and through multi-word items and listening exercises.

The review that could be added to the end of listening exercises need not be very long. Indeed, Ebbinghaus found that a single repetition of an item lasting only seven seconds saved twelve seconds on relearning one day later (Ebbinghaus 1913; see section 23).⁸ If one added a seven second review of each of the day's vocabulary items to the listening exercises, this would add only forty-nine seconds to study each day; however, it would save more time on the following day's review. Further, consider the time saved in initial learning using the new approach. Earlier I stated that, using the new approach, subjects would have learned roughly the same number of items in ten minutes that they learned in fifteen minutes using a longer word list. This is quite a significant time savings that could be applied to adding extra spaced review of the vocabulary items. When one applies the time savings using the new approach to adding more time for spaced review, this could lead to potentially significant gains in long-term retention using the new approach as opposed to the longer word list. Thus, the results of the delayed post-tests here do not reveal an insurmountable flaw for the new approach concerning long-term retention, but rather it is possible to see how these results could actually lead to significant improvements. Further, it is possible to see how best to use the time savings provided by the new approach in initial learning. Of course, this would require further testing, which will be a subject covered in Chapter 6.

5.3.2 Experiment # 2

The second experiment was similar to the previous one; however, instead of word lists, flashcards were used. Flashcards are a very commonly used approach to BH vocabulary learning; however, the sets of vocabulary cards are usually quite large and not broken into smaller parts (e.g., Dillard 1999; Van Pelt 2004; among others). Once again, the research in Chapter 2 suggested that smaller sets of items could be beneficial for learners, and this VLS was incorporated into the new approach in Chapter 4 in an overarching manner.

5.3.2.1 Methodology

Sixteen subjects in a first-semester introductory course in BH participated in the experiment. This experiment was very important since early beginner students in BH are the primary kind of learners in view for the new approach to BH vocabulary learning. This experiment also employed a within-subjects design with subjects participating in both parts of the experiment. In part one, subjects were given a set of twenty-one flashcards with a BH word on the front and a meaning on the back. They were then asked to memorize the words on the flashcards. The session lasted approximately fifteen minutes. After the fifteen minute learning session, the subjects took an immediate post-test. After a

⁸ This is a classic work in the field of psychology and is available online at: <http://psychclassics.yorku.ca/Ebbinghaus/index.htm>. There are no page numbers given.

break, subjects were given three sets of seven flashcards with five minutes to learn each set, and an immediate post-test followed each five minute learning session. Delayed post-tests for each part of the experiment were given one week later.

5.3.2.2 Results

As with the previous experiment, a paired t-test was run on the scores from the immediate and delayed post-tests using StatCrunch. The scores from the immediate post-tests were as follows:

Table 16. Immediate Post-Test Scores for Experiment 2

Row	21 Flashcards	3 Sets of 7 Flashcards
1	1	14
2	3	10
3	5	15
4	10	18
5	2	14
6	9	20
7	1	9
8	2	17
9	10	21
10	5	11
11	5	12
12	15	21
13	10	15
14	3	18
15	5	15
16	4	17

The results of a paired t-test were the following:

Table 17. Immediate Post-Test Results for Experiment 2

Options					
Hypothesis test results:					
$\mu_1 - \mu_2$: mean of the paired difference between 21 Flashcards and 3 Sets of 7 Flashcards					
$H_0 : \mu_1 - \mu_2 = 0$					
$H_A : \mu_1 - \mu_2 < 0$					
Difference	Sample Diff.	Std. Err.	DF	T-Stat	P-value
21 Flashcards - 3 Sets of 7 Flashcards	-9.8125	0.8073555	15	-12.153877	<0.0001

With a P-value of <0.0001, this test produced a statistically significant result, which will be dealt with in the discussion section below.

The results of the delayed post-test given one week later were as follows:

Table 18. Delayed Post-Test Scores for Experiment 2

Row	Set of 21 Flashcards	3 Sets of 7 Flashcards
1	1	0
2	0	1
3	0	1
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0

Another paired t-test was performed with the following results:

Table 19. Delayed Post-Test Results for Experiment 2

Options					
Hypothesis test results:					
$\mu_1 - \mu_2$: mean of the paired difference between Set of 21 Flashcards and 3 Sets of 7 Flashcards					
$H_0 : \mu_1 - \mu_2 = 0$					
$H_A : \mu_1 - \mu_2 < 0$					
Difference	Sample Diff.	Std. Err.	DF	T-Stat	P-value
Set of 21 Flashcards - 3 Sets of 7 Flashcards	-0.0625	0.11063265	15	-0.5649327	0.2902

With a P-value of only 0.29, this test did not produce a statistically significant result.

5.3.2.3 Discussion

The results of the second experiment were quite different from the results of the first experiment with regard to the delayed post-testing. In the first experiment, shorter word lists produced better results on the immediate post-tests in a statistically significant manner; however, the longer word list produced better results than the shorter word lists on the delayed post-tests in a statistically significant manner. In this experiment, smaller sets of flashcards produced better results than larger sets of flashcards in a statistically significant manner on the immediate post-testing, while the results of the delayed post-test showed a nearly identical result. This requires some explanation.

There are several factors that could have produced different results on the delayed post-tests between the two experiments. First, it could potentially be something inherent in the difference between flashcards and word lists that produced the different results. Or, it could have been some difference between the subjects tested. In the first experiment, subjects were second-semester students, who

were still relative beginners in BH, whereas the subjects in the second experiment were in a first-semester course only just then beginning to learn some vocabulary. Whatever the explanation, there are two important points of overlap between the two experiments.

First, in both experiments, shorter word lists or smaller sets of flashcards produced drastically better results on the immediate post-tests. With a P-value of less than .05 in this experiment, one can claim with a high degree of confidence that these dramatically better results were due to the reduction in the size of the sets of flashcards and not to some other factor. Not one of the subjects in the entire test performed at the same level or better using the larger set of flashcards. In fact, several of the subjects learned more words in one set of seven flashcards than they did using the entire set of twenty-one. In terms of averages on the immediate post-tests, the average number of items learned using the larger set of flashcards was 5.625, whereas the average using the smaller sets of flashcards was 14.375. This is about 2.5 times as many words learned using the smaller sets of flashcards. These results are even more dramatic than the results from the first experiment. Again, this may be due to the fact that these learners were only just now beginning to learn vocabulary. Considering again the time savings over and against the larger set of flashcards, this essentially means that one could have about 2.5 times as much time to devote to strategies like spaced review that one would not have with the larger set of flashcards.

A second important point of overlap is that, once again, neither approach produced very good results on the delayed post-tests. This corresponds to what has been claimed throughout this study and was mentioned in section 5.3.1.3, namely, that spaced review should be used as a primary mechanism for long-term retention. There is likely no approach that is going to produce very good results for long-term memory only on a first exposure. Thus, an approach that uses smaller lists or sets of flashcards is not risking significant losses in terms of long-term memory. In addition, smaller lists or sets of flashcards, when used in conjunction with spaced review (for which there would be additional time due to faster initial learning) and other strategies, like the use of pictures for dual encoding, could make use of the benefits of smaller numbers of items for initial learning, while improving results for long-term memory. However, this would require more testing to determine if this is actually the case.

5.3.3 Experiment # 3

The third experiment was decided upon after the first two had been run. In the first two experiments, it seemed clear that shorter sets of words were better for initial learning, especially if steps could be taken to attempt to improve the delayed recall. The aim of the third test was slightly different. It was meant to test an assumption of the approach used throughout Chapter 4, namely that students should see short sets of words in lists on first encounter, rather than on flashcards. In Chapter 4, flashcards are only used on subsequent encounters to encourage recall. In an attempt to test what is best for first exposure, the third experiment involved testing three sets of seven word lists versus three sets of seven flashcards.

5.3.3.1 Methodology

Fourteen subjects in a second-semester BH course participated in the experiment. It, once again, employed a within-subjects design, so that each subject participated in both parts of the experiment. In part one, subjects were given three sets of seven word lists with five minutes to learn each set of words, and post-tests immediately following each set. In part two, subjects were given three sets of seven flashcards with five minutes to learn each set of words and post-tests immediately following each set.

5.3.3.2 Results

The results of the immediate and delayed post-tests were computed by means of a paired t-test. The data set for the immediate post-test was as follows:

Table 20. Immediate Post-Test Scores for Experiment 3

Row	3 Sets of 7 Word Lists	3 Sets of 7 Flashcards
1	18	21
2	21	20
3	21	21
4	16	15
5	21	20
6	21	21
7	21	21
8	21	20
9	21	21
10	16	15
11	15	7
12	15	14
13	15	16
14	13	18

I followed the same steps for running the paired t-test as I did in the previous experiments. The results of the paired t-test were as follows:

Table 21. Immediate Post-Test Results for Experiment 3

Options					
Hypothesis test results:					
$\mu_1 - \mu_2$: mean of the paired difference between 3 Sets of 7 Word Lists and 3 Sets of 7 Flashcards					
$H_0 : \mu_1 - \mu_2 = 0$					
$H_A : \mu_1 - \mu_2 > 0$					
Difference	Sample Diff.	Std. Err.	DF	T-Stat	P-value
3 Sets of 7 Word Lists - 3 Sets of 7 Flashcards	0.35714287	0.75306803	13	0.47425047	0.3216

The word lists did produce somewhat better results on the immediate post-test; however, the P-value is only .32. Thus, the results were not statistically significant enough to say whether the better results were produced by the approach used or some other factor.

In addition, delayed post-tests were given. The data set from the delayed post-tests was as follows:

Table 22. Delayed Post-Test Score for Experiment 3

Row	3 Sets of 7 Word Lists	3 Sets of 7 Flashcards
1	4	4
2	2	0
3	1	2
4	2	0
5	1	0
6	0	1
7	1	0
8	0	0
9	0	0
10	3	1
11	0	0
12	0	0
13	0	2
14	0	0

And, the results of the paired t-test were the following:

Table 23. Delayed Post-Test Results for Experiment 3

Difference	Sample Diff.	Std. Err.	DF	T-Stat	P-value
3 Sets of 7 Word Lists - 3 Sets of 7 Flashcards	0.2857143	0.32188612	13	0.88762534	0.1954

Again, the word lists produced somewhat better results; however, the P-value is not low enough to determine if the better results were produced by the approach used or some other factor.

5.3.3.3 Discussion

Since the results of this test were inconclusive, there are only a couple of aspects of the testing to mention. First, though the results were inconclusive, there was certainly nothing in the testing to suggest that flashcards should be used on first encounter rather than word lists. Indeed, the subjects performed better using the word lists; however, the results were not of the magnitude necessary.

Second, what would be needed to prove beyond doubt that word lists would be better for a first encounter? If the results of this test are indicative of what would happen in future testing, what would

be needed is likely a fairly large sample size. Rather than testing 14 students, one would need to test a much larger group. For instance, if the results from the immediate post-test were duplicated and used again to give twenty-eight scores, the P-value still would not have been low enough to give a conclusive result. Thus, the size of the sample would probably need to be quite large.

In light of the results here, the strategy of using word lists on first encounter followed by subsequent exposure to flashcards will be maintained for the new approach. Yet this will be done in knowledge that it would take more testing to make certain that this is the best approach.

5.4 A Final Consideration

Before concluding this chapter, I would like to attend to one final consideration hinted at in section 5.3 and throughout the discussion of the experiments. As I have stated throughout, the testing done in this chapter has been necessarily partial. Perhaps at this point readers are convinced of the positive potential for the strategy of breaking down lists into smaller parts; however, all may not see the need to look back at Chapters 2 and 4 in order to make wholesale changes. In other words, some might attempt simply to use currently existing approaches, like the word lists in currently existing instructional materials, and simply break them down into smaller parts. Indeed, I do think that this study will have been relatively successful even if only this step were to be taken; however, I would like to make one final attempt here at suggesting that such an approach would still not be “better,” because it would not take seriously a cognitive understanding of language. More of the approach from Chapter 4 should be taken seriously. In other words, although fast initial learning is beneficial, faster learning is not the only consideration to keep in mind.

The best explanation I have found for the point being made here is in Chapter 4 of the *Neuroscience of Language* (Pulvermüller 2002). For a fuller discussion, I would refer the reader to that text, as I will only touch upon the issue here. Pulvermüller suggests that words are stored in the brain in neuronal webs. He describes one study as follows (2002:60):

When pictures of animals and tools were presented in a naming experiment, several areas, including occipital and temporal sites and the classical language areas, were found to increase their activity (Martin et al. 1996). Category-specific activation was found in the premotor cortex and middle temporal gyrus when tools had to be named silently, and in the occipital and inferior temporal lobe when animals had to be named ... These results meet the previously noted predictions. One may speculate that the premotor activation is related to the action associations of tool names, as the activation in the inferior-temporal and occipital areas may be related to the visual attributes of animal names. The additional activation in the middle temporal gyrus in tool naming may be related to movement associations elicited by the words involved.

Though the language of neuroscience, such as “middle temporal gyrus,” is foreign to most instructors of BH (present author included), the basic point is simple. When one uses or encounters a word, the

language area of the brain is not the only area activated. Simultaneously, motor and visual areas may be activated as well.

In terms of the present study, this is where some strategies can still be important, even though simply shortening lists may yield good results in testing. The strategies in the new approach, especially the pictorial and kinesthetic ones, can be seen as a part of a vocabulary program that is more sound from a cognitive perspective than those which simply have words on a page or a sound recording. Imagine that a student is learning the BH word **מַטְרֵן**, which is often translated as “hammer.”⁹ Now consider that when the student sees the word **מַטְרֵן**, this activates not only the language areas of the brain, but also the visual. It is possible that the student who learns this word using only a word list would translate the word as “hammer,” yet have the following type of visual information activated:



The student may not consider that a “hammer” did not look like this in Ancient Israel, but they would have nothing else to go on, having never seen a picture of a **מַטְרֵן**. The linguistic information would be correct; however, the visual information would be faulty. This is a very simple example used for effect that may have very few ramifications for exegesis. Yet it is not difficult to imagine a situation where the scenario described above might lead to exegetical problems. Thus, an approach to vocabulary that at least attempts to provide culturally relevant pictures, or suggests movements, might provide for more well-rounded development in exegetes of the Hebrew Bible. So, though one might be tempted to simply use shorter lists within a currently existing framework, I would maintain that the rest of the considerations in Chapters 2 and 4 still need to be taken seriously.

5.5 Conclusion

In this chapter, I have described the results of a case study focusing on association and the implicit learning aspects of the newly developed vocabulary program. I have also discussed the results of experiments focused on explicit learning. The case study and experiments had the expected result of

⁹ This illustration is chosen for ease of pictorial representation, though the word itself is relatively rare.

demonstrating that the newly developed approach has a number of potential advantages over currently existing approaches. First, the case study demonstrated that the newly developed approach can lead to gains in areas of vocabulary knowledge not normally addressed in current BH vocabulary instructional materials. These gains were in the areas of association, grammatical behavior, and collocation. The case study was by nature inconclusive in determining whether the newly developed approach is the *best* way to achieve gains in these areas; however, it does suggest that future research should be done on determining what the best way to achieve these gains are. Some aspects of such future research will be discussed in Chapter 6.

In addition to these expected results, the case study also suggested several improvements that could be made to the newly developed materials. One easy example would be to keep the listening exercises at a slowed down rate throughout the entire first-semester course and explain more clearly their aim. A second more involved example would be to incorporate more fully the concept of “noticing.” This is an important concept in the applied linguistics literature; therefore, I will discuss it more fully in Chapter 6 as one of the areas of future research.

Second, the larger-scale experiments on explicit learning demonstrated that the newly developed approach is better for faster initial learning than currently existing approaches, though not necessarily for long-term retention, as seen in experiment #1. That the newly developed approach did not produce statistically better results on the delayed post-test for experiment #1 is not an insurmountable flaw in the new approach. As an area of future research and development, it would be beneficial to study whether the newly developed approach can be adjusted to take advantage of both the faster initial learning while also producing better results in terms of retention. One suggestion was made above, and this among other suggestions will be traced out more fully in Chapter 6.

In the experiments on explicit learning, particular attention was also paid to the strategy of breaking lists down into smaller parts. The reasoning for this was that perhaps some textbook writers, instructors, and learners would not be convinced at this point to adopt a whole new approach to vocabulary teaching and learning. There is certainly a significant amount of work left to be done, and perhaps an even better approach may follow. Yet in the meantime, this is a very simple strategy that could be adopted very easily and produce potentially drastic results. Thus, it would seem that even if only this one strategy was adopted by instructors and learners alike, this dissertation will have been a valuable contribution to learners of BH vocabulary.

5.6 Addendum

Though in the end I performed other testing because of some of the problems in the material included in this addendum, the testing presented here does have some value. I will discuss three ways in which it might be seen as valuable. First, the flashcards used in these experiments actually mirror somewhat more closely the new approach developed in Chapter 4 than do the materials used in the three experiments above. The problem, then, is not that these materials do not mirror the new approach, but

rather that they tried to test too many variables on the flashcards at one time. Looking at the results across these three experiments can provide a relatively good idea of how an approach mirroring more closely the one developed in Chapter 4 might work. Indeed, in the second and third experiments below, with the exception of one outlying score, nearly 82% of the subjects learned seven out of seven words using one set of enriched flashcards.

Second, one experiment is helpful for demonstrating how well another currently existing approach to BH vocabulary learning works. In the experimentation above, word lists and flashcards were used; however, word list plus audio is used in the first experiment below. This is a strategy that I do not think has been tested in any significant manner, though there are a number of BH materials that make use of it (e.g., Pennington 2003; Pratico, Van Pelt & Pennington 2006). In the first experiment below, it produced fairly poor results. Thus, regardless of what one takes from this study, instructors may want to consider testing the approach of word list plus audio much more thoroughly before recommending these products to students. This is especially true in light of the fact that the audio is sometimes even used as a stand-alone by some students without the word list in front of them.

Third, the testing below can also serve as a potential aid for future research. Future researchers on BH vocabulary learning may compare the set of testing above with the set of testing that follows as an aid in developing future experiments. They might learn better ways of constructing tests so that they do not attempt to test too many variables at once.

Against this background, three larger-scale experiments were conducted to comprise the one major study. These experiments compared the newly developed approach with three approaches that currently appear in wide use, namely, word lists (most textbooks, Van Pelt & Pratico 2003; Mitchel 1984), word lists plus audio (Pennington 2003; Pratico, Van Pelt & Pennington 2006), and flashcards (Dillard 1999; Van Pelt & Pratico 2003; Hoffeditz & Thigpen 2007). The experiments were not meant to be exhaustive, since they did not include approaches like that of Landes (2001), which involves learning words through cognates. However, there were reasons for not testing against some of the other approaches that are available. For instance, Landes' (2001) approach violates the idea of learning words by frequency and may lead to the problem of interference in recall (see section 1.1.1). Many of the considerations for deciding which approaches to choose for testing are found in Chapter 2.

It is possible to give a general overview of the experiments since they were very similar. The studies used a within-subjects design (see section 5.3 above). In both parts of the two part experiment, subjects were given a set of words and a specific amount of time to learn them, along with their meanings.¹⁰ The first set contained twenty-one words given in the form of a word list, a word list plus audio, or flashcards. Subjects were given fifteen minutes to try to memorize the words and their meanings using the method provided. They were given an immediate post-test at the end of the

¹⁰ All words chosen for the study were *hapax legommena* to ensure that the subjects did not know them previously. Some of the words may have been cognates of those that the subjects had already studied. But, considering the level of the students tested, this seemed somewhat unlikely.

fifteen minute learning session. After this test, students were given a five to ten minute break to deal with the potential “carryover effect” caused by mental fatigue. They were then given a second set of words; however, this set contained only seven. The words were provided in the form of flashcards that were meant to mimic those in the computer-based program developed for this dissertation. The flashcards contained a color-coded BH word on the front, and the meaning along with a strategy for memorizing it on the back. Subjects were given the choice of using flashcards either with a visual strategy or a verbal strategy, except in one of the experiments where the verbal cards were eliminated due to a potential language barrier, which will be explained below. Subjects were then given five minutes to try to memorize the words and their meanings. Thus, in the first part of the experiment, they had five minutes per seven words (twenty-one words/fifteen minutes). In the second, they also had five minutes per seven words. After the five minute learning session, they took another immediate post-test.

Besides the immediate post-test, subjects also received a delayed post-test one week later. This test was given to check for long-term retention. It was hypothesized that students would remember more words per seven studied using the newly developed approach than they would using the currently existing approach on both the immediate and delayed post-tests. However, subjects were not expected to perform very well overall on the delayed post-test (see section 5.3 above).

In order to test the hypothesis that subjects using the newly developed approach would perform better in the immediate and delayed post-tests, a paired t-test was run on the scores using the StatCrunch online statistics program. All of the defaults for typical t-tests were used. The hypothesis was considered confirmed if the p-value from the test was 0.05 or lower.

5.6.1 Experiment # 1

The first experiment compared the newly developed approach to vocabulary learning with word list plus audio approaches. This approach appears to be gaining in popularity since Pennington (2003), who used this approach strictly for a vocabulary learning material, joined with Pratico and Van Pelt (2001) to apply this approach to their elementary grammar, resulting in a new material (Pratico, Van Pelt & Pennington 2006). Kittel, Hoffer, and Wright (2005) used word list plus audio, though they also employed learning words by cognate.

5.6.1.1 Methodology

Fourteen subjects in a second-semester introductory course in BH participated in the experiment. It employed a within-subjects design; therefore, each subject participated in both parts of the two part experiment. In part one, subjects were given a word list consisting of twenty-one words along with an audio recording. They were then asked to memorize the word list using the audio recording. The audio recording allowed them to listen to the set of twenty-one words five times. The recording lasted

approximately fifteen minutes. After the fifteen minute learning session, the subjects took an immediate post-test.

In part two, subjects were asked if they considered themselves visual learners or verbal learners. Each student chose to receive the visual materials. Each subject received a set of seven flashcards with a BH word on the front and its meaning on the back. Next to the meaning was a relevant picture depicting the meaning or a visualization strategy. The cards were color-coded: green for nouns, red for verbs, purple for adjectives, and black for any other type of word. These cards were meant to mimic the computer-based program developed for this dissertation. The subjects were then told that they would have five minutes to try to learn the words and their meanings. The subjects studied the cards for five minutes and afterwards received an immediate post-test.

Besides the immediate post-test, the subjects also received a delayed post-test one week later. The delayed post-test, once again, included all the words from part one and all the words from part two.

5.6.1.2 Results

To determine the results of the study, a paired t-test was run on the scores from the immediate and delayed post-tests. The scores from the immediate post-test were as follows:

Table 24. Immediate Post-Test Scores for Experiment 1 (Addendum)

Row	Word list + Audio (# correct per seven words)	New Approach (# correct per 7 words)
1	5.33	7
2	4.67	7
3	5.67	5
4	0.33	0
5	0	4
6	2.33	6
7	3.67	7
8	1.33	1
9	1.67	3
10	1	6
11	4	6
12	1	3
13	1	5
14	2.67	6

The scores are given in terms of number of items correct on the immediate post-test per seven items studied. The source of the number for the second column should be readily apparent since subjects studied only seven words. The number simply represents the raw score on the immediate post-test. However, for the first part of the test this number was calculated by dividing the subject's raw score by three. In other words, if a student got 12 out of 21 correct, this was taken as getting 4 correct out of every 7 words studied in order to make the scores on the two tests comparable. Another way to think of this would be to consider each score as the number of words learned per five minutes of study. When these scores were entered, the steps for running the paired t-test in StatCrunch were

fairly simple. The same procedure for running the paired t-test in the aforementioned experiments was followed (see section 5.3.1.2). The results were as follows:

Table 25. Immediate Post-Test Results for Experiment 1 (Addendum)

The screenshot shows the 'Paired T statistics' window in StatCrunch. It displays the hypothesis test results for the comparison between 'Word list + Audio' and 'New Approach'. The null hypothesis is $\mu_1 - \mu_2 = 0$ and the alternative hypothesis is $\mu_1 - \mu_2 < 0$. The test results are summarized in the following table:

Difference	Sample Diff.	Std. Err.	DF	T-Stat	P-value
Word list + Audio (# correct per seven words) - New Approach (# correct per 7 words)	-2.237857	0.4757183	13	-4.7041645	0.0002

As with the aforementioned experiments, the key value is the “P-value.” As stated in the overview above, in experimental research a P-value of 0.05 or less is considered to be statistically significant. The P-value for this test was 0.0002 making it highly significant.

In a similar manner, a paired t-test was run on the scores from the delayed post-test. The scores from the delayed post-test were as follows:

Table 26. Delayed Post-Test Scores for Experiment 1 (Addendum)

The screenshot shows the 'Data' table in StatCrunch with 12 rows of scores. The columns are 'Word list + Audio Delayed (# correct per 7 words)' and 'New Approach Delayed (# correct per 7 words)'. The data is as follows:

Row	Word list + Audio Delayed (# correct per 7 words)	New Approach Delayed (# correct per 7 words)
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	1
11	0.33	1
12	1	2

Notice that in this test there were only 12 scores. This was due to the absence of students who participated in the first part of the experiment. This is not uncommon in testing. The same procedure was followed in StatCrunch and the results were the following:

Table 27. Delayed Post-Test Results for Experiment 1 (Addendum)

The screenshot shows the 'Paired T statistics' window in StatCrunch for the delayed post-test. It displays the hypothesis test results for the comparison between 'Word list + Audio Delayed' and 'New Approach Delayed'. The null hypothesis is $\mu_1 - \mu_2 = 0$ and the alternative hypothesis is $\mu_1 - \mu_2 < 0$. The test results are summarized in the following table:

Difference	Sample Diff.	Std. Err.	DF	T-Stat	P-value
Word list + Audio Delayed (# correct per 7 words) - New Approach Delayed (# correct per 7 words)	-0.2225	0.118539885	11	-1.8770053	0.0436

Here also the important value is the P-value of 0.0436. Since this number is below the threshold of 0.05, there is a statistically significant difference between the new approach and word list plus audio in terms of long-term recall, though this difference does not appear to be quite as significant in terms of short-term recall.

5.6.1.3 Discussion

For both the immediate and delayed post-tests, subjects performed better in a statistically significant way with the new approach than they did with a word list plus audio. In terms of delayed recall, one might suggest that these findings are not very helpful since neither approach seems to have produced very good results. Though this is true, I refer to the overview, where it was stated that subjects were not expected to do very well in long-term retention. The fact remains that the best way to develop long-term retention of words is through spaced reviews. Indeed, a delayed post-test one week later is almost irrelevant to the approach to vocabulary learning developed for this dissertation because in the overall program students review words only one day after initial study, as well as one week later. In other words, they are never asked to go for one week after an initial learning before recalling words again.

In terms of immediate recall, a few analogies from the test scores may be helpful. Consider that in using the word list plus audio, no subject learned all twenty-one words in fifteen minutes. The closest any subject came was seventeen words out of twenty-one. However, using the new approach, three students learned seven out of seven words. This suggests that if the students studied seven words for five minutes in three different sessions (perhaps on three different days as in the program developed for this dissertation), then these students could possibly have learned twenty-one words in fifteen minutes, though these results would not be guaranteed. Or, simply consider the mean for the two different approaches. Using a word list plus audio, these subjects learned on average 2.48 words out of every seven studied, or 2.48 words per each five minutes of study. Using the new approach, students learned on average 4.71 words out of every seven studied, or 4.71 words per each five minutes of study. Using the new approach subjects learned nearly double the amount of words for every five minutes that they studied. Finally, consider that some subjects actually learned the same number or more words during the second learning session, which included only seven words, than they did in the first learning session that included twenty-one. Here are some examples: test one score = 0/21 and test two score = 4/7, test one score = 3/21 and test two score = 6/7, test one score = 3/21 and test two score = 3/7, and test one score = 3/21 and test two score = 5/7. These figures suggest that students did far better spending five minutes studying seven words with some type of imagery than by studying twenty-one words for fifteen minutes using a word list plus audio.

As has been stated above, the problem with this testing is that it is impossible to tell which aspect of the second approach led to better results or whether all strategies contributed to some degree. Thus, this testing, though it may provide some important information, such as some students learning more words using the second approach than they did in using the entire twenty-one word list with audio

accompaniment, is still limited in value. Yet in light of this experiment, instructors might be more cautious toward using a material like Pennington (2003) until further testing was performed on it.

5.6.2 Experiment # 2

The second experiment compared the newly developed approach with a simple word list approach. This approach has been the staple of most BH vocabulary books (Mitchel 1984; Van Pelt & Pratico 2003) and introductory grammars (Weingreen 1959; Simon, Resnikoff & Motzkin 1992; Pratico & Van Pelt 2001; among others). Thus, positive results on this experiment could potentially suggest that the newly developed approach performs better than most of what is available.

5.6.2.1 Methodology

Eleven subjects in a second-semester introductory course in BH participated in the experiment.¹¹ It employed a within-subjects design with subjects participating in both parts of the experiment. In part one, subjects were given a word list consisting of twenty-one words and their meanings. They were then asked to memorize the word list in any way they chose. The session lasted approximately fifteen minutes. After the fifteen minute learning session, the subjects took an immediate post-test.

In part two, subjects were asked if they considered themselves visual learners or verbal learners in order to determine whether they would receive visual or verbal flashcards. In this experiment, some students chose the verbal cards while others chose the visual ones.¹² Each subject received a set of seven flashcards with a BH word on the front and its meaning on the back. For the visual learners, either a relevant picture depicting the meaning or a visualization strategy was next to the meaning. The verbal learners received cards that had a keyword strategy below the meaning. The cards were color-coded: green for nouns, red for verbs, purple for adjectives, and black for any other types of words. Once again, these cards were meant to mimic the computer-based program developed for this dissertation. The subjects were then told that they would have five minutes to try to learn the words and their meanings. The subjects studied the cards for five minutes and afterwards received an immediate post-test.

Besides the immediate post-tests, the subjects also received delayed post-tests one week later. The delayed post-tests checked memory on all of the words from part one and part two.

¹¹ One of the students was absent for the second part of the testing.

¹² After the experiment was conducted, some subjects reported a small matter of confusion. They felt as though the verbal cards were also visual to some degree. This is true of the keyword technique. It does contain a visual component; however, the classification as verbal in this study follows Schmitt (1997). Hulstijn (1997) and Nation (2001:311) note that there are both verbal and visual steps to this strategy; however, the initial link is verbal.

5.6.2.2 Results

As in the previous experiment, a paired t-test was performed on the scores from the immediate and delayed post-tests. The scores from the immediate post-test were as follows:

Table 28. Immediate Post-Test Scores for Experiment 2 (Addendum)

Row	Word list (# correct per 7 words)	New approach (# correct per 7 words)
1	6	0
2	7	7
3	7	7
4	7	7
5	7	7
6	7	7
7	2.67	6
8	6	7
9	4.67	7
10	6	7
11	3.33	5

Following the previous experiment, the scores are given in terms of number of items correct on the immediate post-test per seven items studied, or per five minutes of study. With these scores entered, I followed the same steps for running the paired t-test as I did before. The results of the paired t-test are as follows:

Table 29. Immediate Post-Test Results for Experiment 2 (Addendum)

Hypothesis test results:
 $\mu_1 - \mu_2$: mean of the paired difference between Word list (# correct per 7 words) and New approach (# correct per 7 words)
 $H_0 : \mu_1 - \mu_2 = 0$
 $H_A : \mu_1 - \mu_2 < 0$

Difference	Sample Diff.	Std. Err.	DF	T-Stat	P-value
Word list (# correct per 7 words) - New approach (# correct per 7 words)	-0.30272728	0.71540594	10	-0.42315456	0.3406

Once again, the important value is the P-value. If this number is less than 0.05, it means that there is a statistically significant difference that is very unlikely to be due to chance alone. In these results the P-value is 0.3406. This essentially means that there is about a 34% probability that the difference in means could be due to chance or some other factor. Thus, it appears that the test did not achieve a statistically significant result. However, it is important to take a somewhat closer look at the data. In this test, it appears that there may be a case of what social science researchers term an “outlier” (Devore & Farnum 2005). If one looks at scores two through eleven above, one sees a pattern. The score is either the same in the first and second column or lower in the first column than in the second. Yet when one looks at the first pair of scores, the score is 6 in the first column and 0 in the second. Nowhere else in the columns is there a six point difference in the scores. In addition, nowhere else in the columns is there a score of 0. Thus, this seems to be a very strange score. To see just how strange it is, I have run the scores to see what the results would look like without this one. The data set then appears as follows:

Table 30. Immediate Post-Test Scores Minus Potential Outlier

Row	Word list (# correct per 7 words)	New approach (# correct per 7 words)
1	7	7
2	7	7
3	7	7
4	7	7
5	7	7
6	2.67	6
7	6	7
8	4.67	7
9	6	7
10	3.33	5

And, the results of the paired t-test would be the following:

Table 31. Immediate Post-Test Results Minus Potential Outlier

Options					
Hypothesis test results:					
$\mu_1 - \mu_2$: mean of the paired difference between Word list (# correct per 7 words) and New approach (# correct per 7 words)					
$H_0 : \mu_1 - \mu_2 = 0$					
$H_A : \mu_1 - \mu_2 < 0$					
Difference	Sample Diff.	Std. Err.	DF	T-Stat	P-value
Word list (# correct per 7 words) - New approach (# correct per 7 words)	-0.933	0.37419263	9	-2.4933684	0.0171

Again, one looks first at the P-value, which here is 0.0171. With this one score removed, the P-value has then shifted from 0.3406 to 0.0171, which means that the probability that the difference between the two results is due to the new approach rather than chance has gone from about 66% to 98%. In the discussion section below, I will examine possible reasons for this outlying score and look at how outliers are handled in the social-science literature.

Another significant factor to consider is that these students also received the delayed post-test one week later. The results were, once again, expected to be poor; however, I hypothesized that the results would still be better for the new approach. The data set for the delayed post-test was as follows:

Table 32. Delayed Post-Test Scores for Experiment 2 (Addendum)

Row	Word list (# correct per 7 words)	New approach (# correct per 7 words)
1	2.67	0
2	1.67	1
3	0.33	0
4	0	0
5	0	0
6	0	0
7	2	3
8	1.33	2
9	0	2
10	0	2

The results of the paired t-test were the following:

Table 33. Delayed Post-Test Results for Experiment 2 (Addendum)

Options					
Hypothesis test results:					
$\mu_1 - \mu_2$: mean of the paired difference between Word list (# correct per 7 words) and New approach (# correct per 7 words)					
$H_0 : \mu_1 - \mu_2 = 0$					
$H_A : \mu_1 - \mu_2 < 0$					
Difference	Sample Diff.	Std. Err.	DF	T-Stat	P-value
Word list (# correct per 7 words) - New approach (# correct per 7 words)	-0.2	0.4312205	9	-0.46379986	0.3269

The P-value for this test was 0.3269. In other words, the mean was slightly higher for the new approach, and one can be about 67% sure that this higher mean was due to the new approach rather than chance. I will discuss this result in more detail below.

5.6.2.3 Discussion

For both the immediate and delayed post-tests, the new approach achieved a higher mean in both tests; however, these results require a great deal more attention than those of the first experiment. The first important question is how one should handle the strange score on the immediate post-test. In the results section, I termed this score an “outlier”; however, one may ask whether there is a statistical method for determining whether it is actually an outlier. If not, it could be objected that I am attempting to bias the results in favor of the newly developed approach. But there is a statistical way of determining whether a score is in reality an outlier.

Assuming that the average reader of this report is not familiar with statistics and its terminology, I will attempt to be explicit. In order to determine if a value represents a real outlier, statisticians make use of a value called the Interquartile Range (IQR). The IQR is computed by first separating the data set into halves using median scores. These halves are once again separated into halves to create quartiles, or fourths, of the original data set. The IQR is the difference between two quartiles. Devore and Farnum (2005:80) provide the following example:

Imagine that an original data set is:

5.9, 6.3, 6.3, 6.5, 6.8, 6.8, 7.0, 7.0, 7.2, 7.3, 7.4 7.6, 7.7, 7.7, 7.8, 7.8 7.9, 8.1, 8.2, 8.7, 9.0, 9.7, 9.7, 10.7, 11.3, 11.6, 11.7

There are 27 scores in this data set with the median (middle) score being 7.7. This data set is initially divided into halves with the median score being placed in both halves in order to make the two halves even. The results would be as follows:

Lower half: 5.9, 6.3, 6.3, 6.5, 6.8, 6.8, 7.0, 7.0, 7.2, 7.3, 7.4 7.6, 7.7, 7.7

Upper half: 7.7, 7.8, 7.8 7.9, 8.1, 8.2, 8.7, 9.0, 9.7, 9.7, 10.7, 11.3, 11.6, 11.7

There are now 14 values in each set. The quartiles are then calculated by taking the middle of each of these sets. Since there is an even number of values, there is no actual middle. Thus, the middle two values are taken and divided by two:

$$\text{Lower quartile} = (7.0 + 7.0)/2 = 7.0 \quad \text{Upper quartile} = (8.7 + 9.0)/2 = 8.85$$

The IQR is then the difference between the upper and lower quartiles:

$$\text{IQR} = 8.85 - 7.0 = 1.85$$

An outlier is then classified in two ways. A mild outlier is a value that is 1.5 IQR from the closest quartile, whereas an extreme outlier is a value that is 3 IQR from the closest quartile. Therefore, in this example a mild outlier would have to be less than 4.225, which is equal to $7 - 2.775$ (i.e., 1.5×1.85), or greater than 11.625, which is $8.85 + 2.775$ (i.e., 1.5×1.85). The value 11.7 would then be a mild outlier. In addition, an extreme outlier would have to be 1.45, which is $7 - 5.5$ (i.e., 3×1.85), or 14.35 which is $8.85 + 5.5$ (i.e., 3×1.85). The example presents no extreme outliers; however, it gives a clear indication of how to determine if a score is an extreme outlier.

Against this background, I will now attempt to determine if the strange 0 score on the immediate post-test constitutes a real outlier and, if so, whether it is mild or extreme. The computation is as follows:

The original data set was:

0, 5, 6, 7, 7, 7, 7, 7, 7, 7

Lower half: 0, 5, 6, 7, 7, 7

Upper half: 7, 7, 7, 7, 7, 7

Again, the median score of seven goes in each half because the original data contained an odd number of score (i.e., 11).

$$\text{Lower quartile} = (6 + 7)/2 = 6.5 \quad \text{Upper quartile} = (7+7)/2 = 7$$

$$\text{IQR} = 0.5$$

Keep in mind that a score that is 3 IQR from 6.5 would be an extreme outlier. It turns out that the 0 score that was called an outlier earlier is 13 IQR from the nearest quartile, 6.5. So, it appears that the score of 0 is a clear example of an extreme outlier. Thus, this label does not appear to be the experimenter's bias, but seems to be justified.

The question still remains how one should handle clear cases of outliers. Smith (1991:27) outlines two ways in which researchers generally deal with them. He says: "Some researchers discard data they consider to be outliers before calculating the mean." He goes on to say: "Others routinely avoid the mean and use the median instead." Either approach would work equally well for this experiment. If the outlying score were to be kept and the median used, the results for the word list approach would be 6, whereas the result for the new approach would be 7. If the outlying score were discarded and the means used, the results would be a mean of 5.767 for the word list approach and 6.7 for the new approach. Each way of handling the outlier would produce about a 1-point difference between the two approaches. For the sake of simplicity, I will adopt the method of eliminating the outlier. Thus, the second set of data in the results section above will be accepted for this study, and the discussion will be based on that data.

Before moving on, I will attempt to give two possible explanations for the outlying score. In the introductory section 5.3 above, I mentioned the “carryover effect,” which researchers note as one of the potential weaknesses of a within-subjects design. This simply refers to the fact that performance in the first part of an experiment may affect performance in the second part. In this case, it is possible that after completing the first part of the experiment, which lasted about 20 to 25 minutes, the subject with the outlying score may have had attentional problems. Perhaps the subject was mentally fatigued after the first part of the experiment. Or, perhaps some other factor led to a “carryover effect,” such as the subject having a test after the experimental session for which the time came closer and closer as the experiment carried on.

Another explanation may be that there was some confusion over the testing procedure. Some subjects who participated in the test reported some confusion over the keyword technique, which was classified as verbal, following Schmitt (1997), though it does have a visual element, as noted by Hulstijn (1997) and Nation (2001:311). The subject may have requested verbal cards and thought that he or she had received the wrong set of cards, due to the partially visual nature of the keyword strategy. It has already been determined that the score was an extreme outlier, and so these are simply two possible explanations.

I will now move on to a discussion of the results of the testing minus the outlying score. It should be noted that the group that participated in this experiment may have been above average at learning new languages, though this cannot be stated with any certainty. Using the new approach, this set of subjects scored higher than the subjects in either of the other two experiments. This might lead one to believe that the difference between the results would be narrow. Indeed, this was the case. As stated above, the mean for these subjects using a word list was 5.767, and it was 6.7 using the new approach. Thus, the support for the new approach does not appear as robust with this group as with the subjects in the first experiment. However, it is important to trace out how this small difference could play out over the long-term. Over the course of a semester, the approach developed in this dissertation proposes that 139 vocabulary items should be learned. If one were to divide this number by 5.767, one would find that it would initially take 24.1 learning sessions of five minutes to learn these words using a word list under the conditions of the experiment. This is roughly the equivalent of two hours (120.5). However, if one were to divide the number of vocabulary items by 6.7, one would find that only 20.75 learning sessions would initially be needed to learn the words using the new approach under the conditions laid out for this experiment. This would be roughly equivalent to one hour and forty-four minutes (103.75).

The difference may not seem very important, yet keep in mind that every minute saved in initial learning is another minute that can later be spent on review, which is the key to long-term memory. In addition, if the initial learning takes less time, one might suspect that review would take less time with words divided into units of seven. Therefore, the amount of time saved using the new approach may not be limited to the initial learning session alone. Further, the possibility that this set of subjects may have been above average at learning new languages, as suggested by the fact that they outperformed

the other groups, could mean that the potential gains for other students of more average capabilities could be even greater.

As with the previous experiment, it is impossible to tell which aspect of the second approach used in this testing led to better results. In addition, in terms of long-term retention, the hypothesis chosen for this experiment had to be rejected. The mean score on the delayed post-test using the new approach was slightly better (1 out of seven as opposed to 0.8 out of seven); however, this difference was not statistically significant. In other words, one can only be partially certain (about 67%) that this difference was due to the new approach rather than to chance. One matter that this part of the experiment did confirm, as in the case of the previous experiment, is that neither approach to initial learning leads to very good long-term retention. This dissertation has maintained the position that strategically spaced review is the key to long-term retention of vocabulary. This is examined in much more detail in section 5.3.1.3 above.

5.6.3 Experiment # 3

The third experiment compared the newly developed approach to vocabulary learning with the use of flashcards. The latter approach, like the word list plus audio approach, is gaining popularity with publishing companies. Students for many years have made their own flashcards; however, pre-made flashcards are now being published, e.g., by Dillard (1999) and Van Pelt (2004). In addition, new flashcard programs like iVocab (Hoffeditz & Thigpen 2007) are being developed. The pre-made cards have the advantage of being quick and accessible since they can be carried easily.

5.6.3.1 Methodology

Fourteen subjects in an introductory BH course participated in the experiment. As in the previous experiments, it employed a within-subjects design with subjects participating in both parts of the testing. In part one, subjects were given a set of flashcards consisting of twenty-one words and their meanings in English. They were then asked to memorize the words and meanings. The session lasted approximately fifteen minutes, after which the subjects took an immediate post-test.

Unlike in the previous experiments, these subjects were not asked whether they were visual or verbal learners. This omission was made due to the cultural difference between the experimenter and the subjects.¹³ Instead, each subject received a set of the visual cards that were used in the previous two experiments. The cards consisted of a BH word on the front and the meaning along with a relevant picture or visualization strategy on the back. The cards were color-coded: green for nouns, red for verbs, purple for adjectives, and black for any other type of word. These cards mimicked the computer-based program developed for this dissertation. The subjects studied the cards for five

¹³ As the researcher, I am a native speaker of American English. The subjects for this testing might not have been familiar with this version of English, and for some of them English would probably not be a native language. This would have made the keyword technique, and in turn the verbal cards, very difficult to use.

minutes and afterwards received an immediate post-test. Besides the immediate post-tests, the subjects also received delayed post-tests one week later.

5.6.3.2 Results

The results of the immediate and delayed post-tests were computed by means of a paired t-test. The data set for the immediate post-test was as follows:

Table 34. Immediate Post-Test Scores for Experiment 3 (Addendum)

Row	Flashcards (# correct per 7 words)	New approach (# correct per 7 words)
1	7	7
2	7	7
3	4.33	3
4	6	5
5	3.67	5
6	2.33	7
7	2.67	7
8	3.33	7
9	6.33	7
10	6.67	7
11	4	7
12	5	7
13	5.67	7
14	4.67	7

For this data set the paired t-test results were the following:

Table 35. Immediate Post-Test Results for Experiment 3 (Addendum)

Options					
Hypothesis test results:					
$\mu_1 - \mu_2$: mean of the paired difference between Flashcards (# correct per 7 words) and New approach (# correct per 7 words)					
H_0 : $\mu_1 - \mu_2 = 0$					
H_A : $\mu_1 - \mu_2 < 0$					
Difference	Sample Diff.	Std. Err.	DF	T-Stat	P-value
Flashcards (# correct per 7 words) - New approach (# correct per 7 words)	-1.5235714	0.5072135	13	-3.003807	0.0051

The P-value for this test was 0.0051, far lower than the 0.05 level needed to demonstrate a statistically significant result. This result suggests one can be very confident that the better scores using the new approach were due to this factor rather than due to chance.

Besides the immediate post-test, subjects received the delayed post-test. The data set for the delayed post-test was as follows:

Table 36. Delayed Post-Test Scores for Experiment 3 (Addendum)

Row	Flashcards (# correct per 7 words)	New approach (# correct per 7 words)
1	0	1
2	0.67	1
3	1.67	2
4	0	0
5	0	0
6	0	0
7	1	0
8	2	1
9	4	2
10	1.33	1
11	2.33	0
12	3.67	1
13	1.67	0
14	0.67	0

The paired t-test results for this data set were the following:

Table 37. Delayed Post-Test Results for Experiment 3 (Addendum)

Options					
Hypothesis test results:					
$\mu_1 - \mu_2$: mean of the paired difference between Flashcards (# correct per 7 words) and New approach (# correct per 7 words)					
$H_0 : \mu_1 - \mu_2 = 0$					
$H_A : \mu_1 - \mu_2 < 0$					
Difference	Sample Diff.	Std. Err.	DF	T-Stat	P-value
Flashcards (# correct per 7 words) - New approach (# correct per 7 words)	0.715	0.29617664	13	2.4141	0.9844

The P-value was 0.9844, which means that the initial hypothesis was not proven correct and was in fact likely to be incorrect. A reverse hypothesis would have been true. The stronger scores using the set of twenty-one flashcards on the delayed post-test were most likely due to the strategy used rather than to chance. This result was unexpected and will be discussed in detail below.

5.6.3.3 Discussion

As with the previous two experiments, the results of the immediate post-test were straightforward. The mean score using the set of twenty-one flashcards was about 4.91 remembered per seven studied, whereas the mean for the new approach was about 6.43 words per seven studied. With a P-value of 0.0051, one can be 99.0049% sure that this better result was due to the new approach rather than due to chance. As in the previous experiment, these results can be translated into what this would mean over the course of a semester. If one takes as a starting point the 139 vocabulary items proposed for learning in this dissertation, one can see the potential time savings for initial learning.

If students were to learn 4.91 words per five minutes studied on average, then 139 can be divided by 4.91. This yields a result of around 28.31. When this number is multiplied by 5, which represents the

number of minutes needed to learn each 4.91 items, one gets the figure of 141.55. This translates into about two hours and twenty-one and a half minutes in initial learning. In contrast, if students were to learn an average of 6.43 words per five minutes, this would translate into about one hour and forty-eight minutes in initial learning. This amounts to a saving of around thirty-three and a half minutes initially. These savings may be multiplied because breaking down the words may also save time in review, in addition to allowing more time for review. In this regard, the new approach appears to be better than large sets of flashcards.

It was found that the delayed post-test did not conform to the hypothesis that the new approach would be better for long-term retention. The explanation for this would be the same as the explanation given for similar results in section 5.3.1.3 above. Namely, the use of the large set of flashcards could provide for review, just as the study of a larger list causes some items to be pushed out of working memory, allowing for the next encounter to be considered review. As stated previously, this explanation can lead to positive developments for the new approach, so that it can take advantage of both its own benefits in initial learning and the benefits that the large set of flashcards displayed for long-term retention. Yet, with this explanation in mind, it is still necessary to look at the mean scores to reinforce one important point. On the delayed post-tests, the mean score for the flashcards was 1.36, whereas the mean score for the new approach was 0.64. Neither 1.36 out of seven words nor 0.64 out of seven is a very good score. This reinforces the point made earlier that no approach is expected to produce very good long-term retention in an initial learning session.

6. Conclusion

6.1 Hypothesis and Research Results

In Chapter 1, I stated that this dissertation had one working hypothesis. That hypothesis was the following:

A new — and possibly more effective — approach to learning BH vocabulary can be developed by making use of insights from research on SLVA.

This hypothesis has been confirmed to a significant degree. First, a new approach to BH vocabulary learning has been developed making use of insights from research in SLVA. This new approach has also been demonstrated to be potentially better through empirical testing, at least for a fast initial learning of vocabulary items. A great deal of research and testing remains to be done in order to ensure that this faster initial learning can be capitalized on without losing anything in terms of long-term retention, though any losses in long-term retention were shown to be minor. Indeed, no approach proved to work very well for long-term retention on first exposure. Finally, one of the assumptions of the program, namely, that lists should be used on first exposure rather than flashcards, had positive, though statistically inconclusive, results.

In addition to this hypothesis, I also outlined a number of research questions in Chapter 1. The research questions and some of their subquestions will be restated here. The first major research question was: which insights from SLVA research hold the most promise for developing an effective approach to learning BH vocabulary, especially in light of BH's nature as a text-based language? In Chapter 2, I determined that the most important insights had to do with how vocabulary and vocabulary learning are defined, as well as which strategies are most useful for learning the items. In this study, vocabulary was defined as independent units, consisting of individual words (*lemmas*), multi-word units, irregular forms, semi-productive forms, and derived forms. Vocabulary learning was defined as the acquisition of any aspect of knowledge about a lexical item, including its meaning(s), written form, spoken form, grammatical behavior, collocations, associations, and frequency, with the learning of an item's meaning being such that it can be passively recalled. Finally, the VLSs determined to be useful for the learning of BH vocabulary were the following (strategies followed by an asterisk were determined to be of limited usefulness):

Factor 1: Strategies involving authentic language use

Read L2 literature and poetry

Factor 2: Strategies involving creative activities

Use computer program to practice words

Physically act out new words *

Use color-coded flashcards (genders)

Factor 3: Strategies used for self-motivation

Enjoy learning new vocabulary

Feel successful when learning new words

Factor 4: Strategies used to create mental linkages

- Link word to L1 word similar spelling *
- Link word to similar sounding L1 word *
- Create links with already known words *
- Relate new words to myself

Factor 5: Memory strategies

- Repeat new word aloud several times
- Review frequently
- Concentrate hard to avoid distractions
- Quiz myself or have others quiz me
- Break lists into smaller parts *

Factor 6: Visual/auditory strategies

- Arrange words on page to form patterns
- Draw pictures of new words *
- Give myself reward or treat
- Talk to someone about feelings

Factor 7: Strategies involving physical action

- Use pantomime and gestures to practice *
- Practice word by using real objects *
- Physically act out new words *
- Relate new words to myself

Factor 8: Strategies used to overcome anxiety

- Notice when tense or nervous
- Talk to someone about feelings

Among these strategies, several were used in an overarching manner.

The second major research question was: what are the current approaches to learning BH vocabulary? This question was accompanied by subquestions concerning the strengths and weaknesses of these approaches, with the final subquestion being: can any of these current approaches serve as a foundation for a new approach based upon insights from research on SLVA? The current approaches to BH vocabulary learning are found primarily in introductory grammars and vocabulary specific materials. These materials almost unequivocally do not define vocabulary or vocabulary learning in the same way that it is defined in the SLVA research. Vocabulary is conceived of mostly as individual words, and vocabulary learning is conceived of primarily as a pairing of form and meaning. In addition, the materials, if they provide any VLSs at all, do not provide them in any comprehensive manner. They also sometimes include VLSs that are either problematic in and of themselves (e.g., certain forms of repetition) or are problematic in the ways in which they are put to use (e.g., learning semantically related items together).

The third major research question can be rephrased as follows: what then does an approach to BH vocabulary learning based on insights from SLVA research look like? This approach was developed first on a DVD; however, it has now been posted on a website (<http://biblicalhebrewvocabulary.com>). An explanation of how each of the helpful strategies from Chapter 2 is incorporated into the program is given in Chapter 4. In addition, Chapter 4 describes a method for identifying multi-word items and other types of vocabulary items to ensure that a more theoretically sound understanding of vocabulary is being used in the new approach. The approach to finding multi-word items in and of itself could prove very valuable for the instruction of BH as a whole, as well as for the field of lexicography.

Finally, the testing described in the preceding chapter answered the fourth major research question, which can be rephrased as follows: if the new approach is developed, does it produce better empirical results than currently existing approaches? The answer to this question was yes, at least for faster initial learning. With these research questions answered, it is important to point out which new research questions have emerged from this study. This is the subject of the following section.

6.2 Avenues for Further Research

I will divide suggested avenues for further research into two parts. First, I will make suggestions about how a new approach to learning BH vocabulary should be incorporated into the learning of the language as a whole. Second, I will suggest avenues for further research concerning VLSs determined to be useful in this study.

6.2.1 Incorporating a New Approach into Biblical Hebrew Instruction as a Whole

As a preliminary point, I would note that some of the research encountered during this study suggests that vocabulary learning should become a far more prominent element of BH instruction as a whole. In fact, Lewis' (1993, 1997) "Lexical Approach" moves vocabulary to the forefront. Though I would not venture as far as Lewis, vocabulary learning is usually treated as ancillary in BH instructional materials. The real matter of importance is *grammar*, while vocabulary is relegated to lists and viewed as a means for learning the grammar. To illustrate this point, consider that vocabulary lists are often grammar driven. Thus, students learn lists of particular grammatical categories of words at one time. For example, when students are learning the grammar of prepositions, they may study lists of vocabulary containing only or mostly prepositions (Pratico & Van Pelt 2001:57–58). Or, when they are learning middle weak verbs (or whatever terminology their textbook has settled upon), they study lists of vocabulary made up of middle weak verbs (Kelley 1992:337). In an approach to BH instruction that takes seriously the importance of vocabulary, one might ask whether this should be the case. For example, vocabulary sets might be arranged by frequency, or by words that frequently form collocations. The approach taken in this study was a modified frequency approach based upon the corpus of Joshua.

Part of the research that suggests that vocabulary should play a more prominent role in instruction demonstrates that the line between grammar and vocabulary is not as clear and distinct as scholars might like. As an example, it has been argued in this study that some multi-word items should be considered vocabulary (Lewis 1993, 1997; Moon 1997). However, in traditional BH instruction, multi-word items are treated as a stringing together of different grammatical elements, rather than as separate items in the mental lexicon. If some elements that were once thought to fall within the realm of grammar are actually matters of vocabulary, the vocabulary element of instruction should experience some elevation in the level of importance attached to it. This does not seem to be the case.

Research must then be done to determine how to elevate the role of vocabulary learning to the level of importance that it appears should be attached to it.

Against the background of this overarching concern, I would also suggest that further research must be done on goals for BH instruction as a whole. For this study, goals had to be assumed. Those goals were given in Chapter 4 and were the following:

1. Bottom-up process *a simple* BH narrative text with the help of a *comprehensive* reading guide and a BH lexicon. “Bottom-up process” implies the ability to explain the development of the act of secondary communication represented by the Biblical Hebrew text in the light of the grammatical and lexical choices of the author in the cultural context and the co-text in which a specific act of communication took place.
2. Bottom-up process a BH prose or poetic text with the help of a reading guide, a BH lexicon, a BH reference grammar and an electronic library (e.g., LOGOS). Engage critically with existing translations, and identify BH constructions that, according to the resources at your disposal, were not translated adequately. Suggest solutions in terms of the resources at your disposal.
3. Bottom-up process a BH prose or poetic text *in terms of an explicitly defined exegetical frame of reference* with the help of a BH lexicon, a BH reference grammar and an electronic library (e.g., LOGOS). Engage critically with existing translations *and commentaries*, and identify BH constructions that, according to the resources at your disposal, were not translated or interpreted adequately. *While maintaining a critical stance from them*, suggest solutions in terms of the resources at your disposal.
4. Genuinely read any given passage in the Book of Joshua. “Genuinely read” implies the ability to use both bottom-up and top-down processes to understand the meaning of a text.

A new approach to BH vocabulary learning was developed in light of these goals; however, it is certain that even slight modifications to these goals could produce significant changes in the approach. This is not to suggest that the approach developed in Chapter 4 is without value. Indeed, most of what was developed in Chapter 4 should prove relatively flexible. For instance, instructors could reduce the number of vocabulary items students learn at one time regardless of their goals for instruction. Yet if, as hinted at in Chapter 1, new goals resulted in a significant reduction in the number of vocabulary items students need, this would in turn result in significant changes in the new approach. For instance, students might only be required to study five or six items at one time. Or, there might be more space for the development of further association exercises like those employed later in the program. Thus, more research needs to be done on goals for BH instruction.

Finally, there is one further matter for future research that could have fallen into the next section of this concluding chapter, but I will treat it here. It has to do with the ordering of the vocabulary instruction for the overall course, specifically concerning the multi-word items. In the present study, the multi-word items were placed toward the latter part of the learning process. The impetus for this

was that it could potentially make the multi-word items somewhat easier to learn, since learners would already know the component parts of the multi-word items when encountering them. For example, students would already know the words “and,” “he said,” and “to,” before they learned “and the Lord said to Moses.” Yet it is possible to imagine how the situation might be reversed. In other words, I can also see how learning the entire phrase “and the Lord said to Moses” first might make it easier to learn the component parts “and,” “he said,” and “to.” In fact, this is the way that one begins in many modern language learning courses, namely by starting off with important phrases. This might help learners to make sense of some of the listening exercises somewhat sooner.

Ultimately, I have not seen any testing that has been done on this specific matter. Yet, I can imagine how a potential test for this might be set up. One could test in a way similar to the experiments done for this study. Subjects could study two sets of materials, with one set being lists of individual words and the other set being lists of multi-word items made up of the same number of individual words as in the first set of materials. For example, subjects could first study a set of seven individual words and then study sets of two multi-word items made up of four and three words respectively. Immediate and delayed post-tests could be given; however, on these tests, subjects would only see individual words and be asked for their meanings. This could demonstrate whether subjects readily break multi-word items down into parts. If subjects were able to break down multi-word items, it seems that starting a course with sets of multi-word items might be desirable. Of course, this may not work well for some multi-word items, such as idioms that display a high degree of non-compositionality.

Or, perhaps this is making matters too simplified. Maybe this is not an all or nothing research question, and individual vocabulary words and multi-word items should be interspersed with one another throughout the vocabulary learning. In fact, this compromise solution might be best in a situation where it might be difficult deciding between two options that seem equally viable. However, it is difficult to imagine how a test might be constructed to examine this way of proceeding.

These suggestions concerning future research in the area of incorporating vocabulary into instruction as a whole were not meant to be exhaustive. Certainly there are other research questions that emerge when examining the prominence that should be given to vocabulary learning or examining how the vocabulary learning should be ordered. Yet, after completing this study, these seem to be some of the more pertinent questions that need to be answered.

6.2.2 More Testing of Vocabulary Learning Strategies

As has been stated previously, not every aspect of the new approach could be tested in Chapter 5. It would have been impossible to isolate which variables might have led to improvement. Thus, there is a need for a significant amount of future testing. This testing should proceed incrementally with one of the major concerns being just how many VLSs can be included while continuing to remain helpful. Stated negatively, is having too many choices of VLSs potentially detrimental for learning vocabulary?

In the present study, I reviewed research on learning styles which I deemed to be important (see section 2.1.3.1). Therefore, I attempted to include as many strategy choices as possible in order to give learners with varying learning styles the widest number of options of strategies. However, I can also understand that providing too many choices of VLSs could lead to indecisiveness by the learner, or could lead to learners using too many of the strategies for each word.

As stated above, further testing on the new approach should proceed incrementally. As an example, I suggested in Chapter 5 that the inclusion of pictures might allow one to make use of the benefits of breaking lists down into smaller parts while making gains in long-term retention. This claim would need to be tested, though, before one could know with any kind of certainty whether or not this is the case. A next set of testing could proceed along the same lines as that done in Chapter 5. Subjects would participate in two part testing, where they learned three sets of word lists containing seven words in each part of the testing. In the first part of the testing, the word lists would contain no pictures, whereas in the second part of the testing, the word lists would contain pictures. Subjects would take immediate and delayed post-tests, just as in the previous testing. A similar test could be repeated with flashcards. This testing would be incremental in the sense that it builds upon the testing done in Chapter 5. The breaking down of lists has already been demonstrated as potentially helpful, especially if gains could be made in the area of long-term retention. Thus, breaking down lists is an aspect of the program that would be incorporated into the testing as a variable that does not change. This incremental type of testing would take a considerable period of time and require quite a number of subjects. Consider that if it was determined that pictures were helpful in the example given, then one would need to repeat the testing adding genuine contexts; if genuine contexts and pictures were helpful, one would need to repeat the testing adding perhaps the keyword technique, and so on.

After the use of pictures, possibly the most important avenue for future research is testing the practice of spaced review. From the outset, the testing performed in Chapter 5 would need to be done again. Subjects could be asked to learn a set of twenty-one words in fifteen minutes, followed by a break and a three minute review. In a second part of the testing, subjects could learn twenty-one words in three sets of seven. Each set could be followed by a break and then a one minute review. In each case, immediate post-tests and delayed post-tests would be given. This testing could be done using both word lists and flashcards, just like the testing done in Chapter 5.

In addition to the testing of the VLSs that have to do with the explicit learning of items, much more longitudinal testing needs to be done. It would be impossible to test the effects of the listening exercises over a short testing period like that used in the larger-scale study in Chapter 5. Further testing in this area will be beset by challenges, some of which were discussed in section 5.2 and following. In many places, when a course is being taken for a grade, that course cannot require participating in any type of experimentation as a part of the grade. Thus, it would seem that this kind of testing would require finding volunteers, which would be much easier with funding for the experimentation. However, funding for such projects appears to be rather limited.

One important avenue with regard to research on implicit learning has to do with the concept of “noticing” in the SLVA research (Schmidt 1990). One of the problematic issues that emerged from the case study is that the subject did not understand completely the purpose of the listening exercises. However, if the vocabulary items that the subject had studied explicitly had been tagged in some way, so that she had noticed them, this might have led to much better acquisition. One way of doing this might be to use color for the words that have been studied, while using only black text for those that have not. There might even be a way of testing this out in a non-longitudinal manner. Subjects could participate in a two part experiment and be given lists of seven words to study for only a very short period of time in each part. After studying these lists, subjects could then have a listening exercise, one in which the words studied were the same color as the rest of the text, and one where the words studied were in another color, perhaps red to make them salient. The subjects would then have post-tests for the word lists in order to examine whether drawing special attention to the items so that they were noticed more clearly led to better performance for remembering the items.

6.3 Concluding Remarks

Against the background of the previous section, the results of this project have turned out to be more modest than first imagined. It would appear that I have ended up with more research questions than I had when I began. The main reason for this was that an experimenter can only test one variable at a time. Yet, I have a number of matters in mind that would allow me to consider this study a success.

First, I would consider this study a success if I were to see writers of BH instructional materials or BH instructors making a concerted effort to cut down on the number of vocabulary items students study at one time. As a matter of anecdotal evidence, the course materials at the University of Stellenbosch have been revised in this regard with seemingly positive results. This is a very simple strategy and could be incorporated relatively easily by nearly any author or instructor who had an impetus to do so.

Second, I would consider this study successful if I began to see BH instructional materials define vocabulary less narrowly. The primary issue that I have in view here is that these materials should include multi-word items as vocabulary in their own regard. Unlike reducing the number of vocabulary items studied at one time, incorporating multi-word items could require much more effort, dependent upon which textbook or type of approach one used. In the research for Chapter 4, I spent countless hours attempting to identify multi-word items with a formula rather than simply by intuition. It would be immensely helpful if a computer programmer would take up this particular issue in such a way as to make using the formula from Chapter 4 an automated process.

Third, I would consider this study a success if others began to take on some of the work of testing some elements of the new approach from Chapter 4. In fact, I would generally consider this study successful if some publishers of BH instructional materials began to test their materials after having seen in this study how testing might proceed. I have in mind here the assessment that the publication of new BH instructional materials has more to do with the pressures of the market than any actual

improvements in the materials themselves (Greenspahn 2005). New materials are published without any empirical support for their claims to be better. Thus, I would feel this study had succeeded if others took up some of the further testing outlined here, and more generally if I began to see more testing being done in the field overall.

Finally, on a related note, I would feel this study was successful if the testing in Chapter 5 opened the minds of BH instructors and authors of instructional materials to consider seriously the other VLSs employed in Chapter 4. Indeed, a number of the strategies employed there could be incorporated relatively easily, though some of them would be more difficult to incorporate. An example of another relatively easy strategy to incorporate would be the use of a picture. BH instructors could require students to sketch pictures of their vocabulary items next to lists or on the backs of flashcards. This set of considerations is not meant to be exhaustive; however, even only the first consideration could lead to quite drastic results for BH learners.

Bibliography

- Aitchison, J. 1994. *Words in the Mind*. 2nd ed. Oxford: Blackwell.
- Balhouq, S. 1976. *The Place of Lexis in Foreign Language Acquisition*. MA Thesis. Sheffield: University of Sheffield.
- Bandura, A., Barbaranelli, C., Caprara, G. V. & Pastorelli, C. 1996. "Multifaceted Impact of Self-Efficacy Beliefs on Academic Functioning." *Child Development* 67:1206–22.
- Bartelt, A. H. 2000. *Fundamental Biblical Hebrew*. St. Louis, MO: Concordia Academic Press.
- Ben-Zvi, E. 1993. *Readings in Biblical Hebrew: An Intermediate Textbook*. New Haven, CT: Yale University Press.
- Bergman, N. 2005. *The Cambridge Biblical Hebrew Workbook: Introductory Level*. Cambridge: Cambridge University Press.
- Bornemann, R. 1998. *A Grammar of Biblical Hebrew*. Lanham, MD: University of America Press.
- Boyle, E. M. 1993. "Beyond Memorization: Teaching Russian (and Other Languages') Vocabulary." *Foreign Language Annals* 26(2):226–32.
- Bulkeley, T. & Wall, L. 2005a. "About the Project: Aims of the Project." [Online.] Accessed: <http://flexiblelearning.auckland.ac.nz/davar/about.html>
- _____. 2005b. "About the Project: Credits." [Online.] Accessed: <http://flexiblelearning.auckland.ac.nz/davar/credits.html>
- _____. 2005c. "About the Project: Design Rationale." [Online.] Accessed: <http://flexiblelearning.auckland.ac.nz/davar/design.html>
- _____. 2005d. *Davar Biblical Hebrew Vocabularies*. [Online]. Accessed: <http://flexiblelearning.auckland.ac.nz/davar/vocabularies.html>
- _____. 2005e. "Using the Vocabularies: For Study." [Online.] Accessed: <http://flexiblelearning.auckland.ac.nz/davar/using.html>
- _____. 2005f. "Using the Vocabularies: For Teaching." [Online.] Accessed: <http://flexiblelearning.auckland.ac.nz/davar/teaching.html>
- Cairns, H. S. 1999. *Psycholinguistics: An Introduction*. Austin, TX: Pro-Ed.
- Cameron, J. & Pierce, W. D. 1994. "Reinforcement, Reward, and Intrinsic Motivation." *Review of Educational Research* 64:363–423.
- Carter, T., Hardy, C. A. & Hardy, J. C. 2001. "Latin Vocabulary Acquisition: An Experiment Using Information-Processing Techniques of Chunking and Imagery." *Journal of Instructional Psychology* 28(4):225–28.
- Chamot, A. U. 1993. "Student Responses to Learning Strategy Instruction in the Foreign Language Classroom." *Foreign Language Annals* 26(3):308-20.

- Chanier, T. & Selva, T. 1998. "The ALEXIA System: The Use of Visual Representations to Enhance Vocabulary Learning." *Computer Assisted Language Learning* 11(5):489–521.
- Cho, K-S, Ahn, K-O & Krashen, S. D. 2005. "The Effects of Narrow Reading of Authentic Texts on Interest and Reading Ability in English as a Foreign Language." *Reading Improvement* 42(1):58–64.
- Cho, K-S, Kim, H-J. & Krashen, S. D. 2004. "Recreational Reading in English as a Foreign Language in Korea: Positive Effects of a Sixteen-Week Program." *Knowledge Quest* 32(4):36–38.
- Chun, D. M. & Plass, J. L. 1996. "Facilitating Reading Comprehension with Multimedia." *System* 24:503–19.
- Church, K. W. & Hanks, P. 1990. "Word Association Norms, Mutual Information, and Lexicography." *Computational Linguistics* 16(1):22–29.
- Coady, J. 1997. "L2 Vocabulary Acquisition through Extensive Reading." In *Second Language Vocabulary Acquisition*, Coady, J. & Huckin, T., eds. Cambridge: Cambridge University Press, pp. 225–37.
- Coady, J. & Huckin, T., eds. 1997. *Second Language Vocabulary Acquisition*. Cambridge: Cambridge University Press.
- Cobb, T. 1999. "Breadth and Depth of Lexical Acquisition with Hands-On Concordancing." *Computer Assisted Language Learning* 12(4):345–60.
- Cohen, A. D. 2003. "The Learner's Side of Foreign Language Learning: Where Do Styles, Strategies, and Tasks Meet?" *International Review of Applied Linguistics* 41:279–91.
- Costanza, R. S., Derlega, V. J. & Winstead, B. J. 1988. "Positive and Negative Forms of Social Support: Effects of Conversational Topics on Coping with Stress among Same-Sex Friends." *Journal of Experimental Social Psychology* 24:183–93.
- Cotton, J. W. 1998. *Analyzing Within-Subjects Experiments*. Mahwah, NJ: Erlbaum.
- Crookall, D. & Oxford, R. L., eds. 1990. *Simulation, Gaming, and Language Learning*. New York: Newbury House Publishers.
- Crystal, D., ed. 1997. *A Dictionary of Linguistics and Phonetics*. 4th ed. Oxford: Blackwell.
- Csizér, K. & Dornyei, Z. 2005. "The Internal Structure of Language Learning Motivation and its Relationship with Language Choice and Learning Effort." *The Modern Language Journal* 89(1): 19–36.
- Day, R. R. & Bamford, J. 1998. *Extensive Reading in the Second Language Classroom*. Cambridge: Cambridge University Press.
- DeClaisé-Walford, N. L. 2002. *Biblical Hebrew: An Introductory Textbook*. Atlanta: Chalice Press.
- DeKeyser, R. M. 2003. *Implicit and Explicit Learning*. In *The Handbook of Second Language Acquisition*, Doughty, C. J. & Long, M. H., eds. Malden, MA: Blackwell, pp. 313–48.

- Devore, J. L. & Farnum, N. R. 2005. *Applied Statistics for Engineers and Scientists*. Pacific Grove, CA: Duxbury Press.
- Dillard, R. B. 1999. *Biblical Hebrew Vocabulary Cards*. Springfield, Ohio: Visual Education.
- Dobson, J. H. 2005. *Learn Biblical Hebrew*. 2nd ed. Grand Rapids, MI: Baker Academic Press.
- Dornyei, Z. 2000. "Motivation in Action: Towards a Process-Oriented Conceptualisation of Student Motivation." *British Journal of Education Psychology* 70:519–38.
- _____. 2001. *Motivational Strategies in the Language Classroom*. Cambridge: Cambridge University Press.
- Dornyei, Z. & Csizér, K. 1998. "Ten Commandments for Motivating Language Learner: Results of an Empirical Study." *Language Teaching Research* 2(3):203–29.
- Dornyei, Z. & Skehan, P. 2003. "Individual Differences in Second Language Learning." In *The Handbook of Second Language Acquisition*, Doughty, C. J. & Long, M. H., eds. Malden, MA: Blackwell, pp. 589–630.
- Doughty, C. J. & Long, M. H., eds. 2003. *The Handbook of Second Language Acquisition*. Malden, MA: Blackwell.
- Durso, F. T. & Shore, W. J. 1991. "Partial Knowledge of Word Meaning." *Journal of Experimental Psychology: General* 120(2):190–202.
- Ebbinghaus, H. E. 1913. *Memory: A Contribution to Experimental Psychology*. Ruger, H. A. & Bussenius, C. E., trans. [Online.] Accessed: <http://psychclassics.yorku.ca/Ebbinghaus/index.htm>
- Ehrman, M. E. & Oxford, R. L. 1989. "Effects of Sex Differences, Career Choice, and Psychological Type on Adult Language Learning Strategies." *The Modern Language Journal* 73(1):1–13.
- _____. 1995. "Cognition Plus: Correlates of Language Learning Success." *The Modern Language Journal* 79(1):67–89.
- Ellis, N. C. 1994. "Vocabulary Acquisition: The Implicit ins and outs of Explicit Cognitive Mediation." In *Implicit and Explicit Learning of Languages*, Ellis, N. C., ed. London: Academic Press, pp. 211–82.
- _____. 1997. "Vocabulary Acquisition: Word Structure, Collocation, Word-Class and Weaning." In *Vocabulary: Description, Acquisition and Pedagogy*, Schmitt, N. and McCarthy, M., eds. Cambridge: Cambridge University Press, pp. 122–39.
- _____. 2003. "Constructions, Chunking and Connectionism: The Emergence of Second Language Structure." In *The Handbook of Second Language Acquisition*, Doughty, C. J. & Long, M. H., eds. Malden, MA: Blackwell, pp. 63–103.
- Ellis, N. C. & Sinclair, S. G. 1996. "Working Memory in the Acquisition of Vocabulary and Syntax: Putting Language in Good Order." *The Quarterly Journal of Experimental Psychology* 49A(1): 234–50.

- Ellison, C. M. & Boykin, A. W. 1994. "Comparing Outcomes from Differential Cooperative and Individualistic Learning Methods." *Social Behavior and Personality* 22(1):91–104.
- Fano, R. 1961. *Transmission of Information*. Cambridge, MA: MIT Press.
- Field, J. 2003. *Psycholinguistics: A Resource Book for Students*. London: Routledge.
- Finkbeiner, M. & Nicol, J. 2003. "Semantic Category Effects in Second Language Word Learning." *Applied Psycholinguistics* 24:369–83.
- Finley, H. E. & Isbell, C. D. 1975. *Biblical Hebrew: A Beginner's Manual*. Kansas City, MO: Beacon Hill Press.
- Fuller, R. T. & Choi, K. 2006. *Invitation to Biblical Hebrew*. Grand Rapids, MI: Kregel Academic.
- Futato, M. D. 2003. *Beginning Biblical Hebrew*. Winona Lake, IN: Eisenbrauns.
- Garrett, D. A. 2002. *A Modern Grammar of Classical Hebrew*. Nashville, TN: Broadman & Holman.
- Goldstein, J. W. 2001. *The First Hebrew Reader: Guided Selections from the Hebrew Bible*. Oakland, CA: EKS.
- Goulden, R., Nation, P. & Read, J. 1990. "How Large Can a Receptive Vocabulary Be?" *Applied Linguistics*, 11:41–63.
- Grabe, W. & Stoller, F. L. 1997. "Reading and Vocabulary Development in a Second Language." In *Second Language Vocabulary Acquisition*, Coady, J. & Huckin, T., eds. Cambridge: Cambridge University Press, pp. 98–124.
- Green, W. H. 1868. *A Hebrew Chrestomathy: Or, Lessons in Reading and Writing Hebrew*. New York: J. Wiley & Son.
- Greenberg, M. 1965. *Introduction to Hebrew*. Edgewood Cliffs, NJ: Prentice Hall.
- Greenspahn, F. E. 2005. "Why Hebrew Textbooks are Different than Those for Other Languages." [Online.] Accessed: <http://www.sbl-site.org//Article.aspx?ArticleId=420>.
- Groot, P. J. M. 2000. "Computer Assisted Second Language Vocabulary Acquisition." *Language Learning and Technology* 4(1):60–81.
- Gu, Y. & Johnson, R. K. 1996. "Vocabulary Learning Strategies and Language Learning Outcomes." *Language Learning* 46(4):643–79.
- Halliday, M. 1989. *Spoken and Written Language*. Oxford: Oxford University Press.
- Harper, W. R. 1890. *Hebrew Vocabularies: Lists of the Most Frequently Occurring Hebrew Words*. New York: Charles Scribner's Sons.
- Hartman, R. K. K. 1981. "Style Values: Linguistics Approaches and Lexical Practice." *Applied Linguistics* 2(3):263–73.
- Higa, M. 1963. "Interference Effects of Intralist Word Relationships in Verbal Learning." *Journal of Verbal Learning and Verbal Behavior* 2:170–75.
- Hoffeditz, D. M. & Thigpen, J. M. 2007. *iVocab*. Grand Rapids, MI: Kregel.

- Horwitz, E. K. 1995. "Student Affective Reactions and the Teaching and Learning of Foreign Languages." *International Journal of Educational Research* 23(7):573–97.
- Hostetter, E. C. 2000. *An Elementary Grammar of Biblical Hebrew*. Sheffield: Sheffield Academic Press.
- Hsiao, T-Y. & Oxford, R. L. 2002. "Comparing Theories of Language Learning Strategies: A Confirmatory Factor Analysis." *The Modern Language Journal* 86(3):368–83.
- Hulstijn, J. H. 1997. "Mnemonic Methods in Foreign Language Vocabulary Learning." In *Second Language Vocabulary Acquisition*, Coady, J. & Huckin, T., eds. Cambridge: Cambridge University Press, pp. 203–24.
- _____. 2003. "Connectionist Models of Language Processing and the Development Multimedia Software for Listening Comprehension." *Computer Assisted Language Learning* 16:413–25.
- Hunter, A. V. 1988. *Biblical Hebrew Workbook: An Inductive Study for Beginners*. New York: University Press of America.
- Hygee, S. 2003. "Classroom Experiments on the Effect of Different Noise Sources and Sound Levels on Long-Term Recall and Recognition in Children." *Applied Cognitive Psychology* 17:895–914.
- Hyltenstam, K. & Abrahamsson, N. 2003. "Maturational Constraints in SLA." In *The Handbook of Second Language Acquisition*, Doughty, C. J. & Long, M. H., eds. Malden, MA: Blackwell, pp. 539–88.
- Isbell, C. D. 2002. *Introduction to Biblical Hebrew*. Warren Center, PA: Shangri-La Publications.
- Jackendoff, R. 2003. *Foundations of Language: Brain, Meaning, Grammar, Evolution*. New York: Oxford University Press.
- Kang, S-H. 1995. "The Effects of a Context-Embedded Approach to Second-Language Vocabulary Learning." *System* 23(1):43–55.
- Kelley, P. H. 1992. *Biblical Hebrew: An Introductory Grammar*. Grand Rapids, Michigan: Eerdmans.
- Kintsch, W. & Kintsch, E. 1969. "Interlingual Interference and Memory Processes." *Journal of Verbal Learning and Behavior* 8:16–19.
- Kittel, B. P., Hoffer, V. & Wright, R. A. 2005. *Biblical Hebrew: Text and Workbook*. 2nd ed. New Haven, CT: Yale University Press.
- Knutson, E. M. 1993. "Teaching Whole Texts: Literature and Foreign Language Reading Instruction." *The French Review* 67(1):12–23.
- Lambdin, T. O. 1971. *An Introduction to Biblical Hebrew*. Edgewood Cliffs, NJ: Prentice Hall.
- Landes, G. M. 1961. *A Student's Vocabulary of Biblical Hebrew: Lists According to Frequency and Cognate*. New York: Charles Scribner's Sons.
- _____. 2001. *Building Your Biblical Hebrew Vocabulary: Learning Words by Frequency and Cognate*. Atlanta: Society of Biblical Literature.

- Lasor, W. S. 1978a. *Handbook of Biblical Hebrew: An Inductive Approach Based on the Hebrew Text of Esther*, Vol. 1. Grand Rapids, MI: Eerdmans.
- _____. 1978b. *Handbook of Biblical Hebrew: An Inductive Approach Based on the Hebrew Text of Esther*, Vol. 2. Grand Rapids, MI: Eerdmans.
- Laufer, B. 1997a. "The Lexical Plight in Second Language Reading: Words you Don't Know, Words you Think you Know, and Words you Can't Guess." In *Second Language Vocabulary Acquisition*, Coady, J. & Huckin, T., eds. Cambridge: Cambridge University Press, pp. 20–34.
- _____. 1997b. "What's in a Word that Makes it Hard or Easy: Some Intralexical Factors that Affect the Learning of Words." In *Vocabulary: Description, Acquisition and Pedagogy*, Schmitt, N. & McCarthy, M., eds. Cambridge: Cambridge University Press, pp. 140–55.
- Laufer, B. & Goldstein, Z. 2004. "Testing Vocabulary Knowledge: Size, Strength, and Computer Adaptiveness." *Language Learning* 54(3):399–436.
- Leffa, V. J. 1992. "Making Foreign Language Texts Comprehensible for Beginners: An Experiment with an Electronic Glossary." *System* 20:63–73.
- Lehmann, W. P., Raizen, E. & Hewitt, H-J. J. 1999. *Biblical Hebrew: An Analytical Introduction*. San Antonio, TX: Wings Press.
- Lewis, M. 1993. *The Lexical Approach: The State of ELT and the Way Forward*. Boston, MA: Thomson/Heinle.
- _____. 1997. "Pedagogical Implications of the Lexical Approach." In *Second Language Vocabulary Acquisition*, Coady, J. & Huckin, T., eds. Cambridge: Cambridge University Press, pp. 255–70.
- _____. 2002. *Implementing the Lexical Approach: Putting Theory into Practice*. Boston: Heinle.
- Lindeman, R. H., Merenda, P. F. & Gold, R. Z. 1980. *Introduction to Bivariate and Multivariate Analysis*. Glenview, IL: Scott, Foresman.
- Lowenthal, K. 1971. "A Study of Imperfectly Acquired Vocabulary." *British Journal of Psychology* 62(2):225–33.
- Lyman-Hager, M. A. 2000. "Bridging the Language-Literature Gap: Introducing Literature Electronically to the Undergraduate Language Student." *CALICO Journal* 17(3):431–52.
- Macaro, E. 2001. *Learning Strategies in Foreign and Second Language Classrooms*. London: Continuum.
- Mansoor, M. 1978. *Biblical Hebrew Step-by-Step*. Grand Rapids, MI: Baker.
- Melka, F. 1997. "Receptive vs. Productive Aspects of Vocabulary." In *Vocabulary: Description, Acquisition and Pedagogy*, Schmitt, N. & McCarthy, M., eds. Cambridge: Cambridge University Press, pp. 84-102.

- Miller, G. A. 1956. "The Magical Number Seven, Plus or Minus Two: Some Limits on our Capacity for Processing Information." *The Psychological Review* 63:81–97.
- Mitchel, L. A. 1984. *A Student's Vocabulary of Biblical Hebrew and Aramaic*. Grand Rapids, Michigan: Zondervan.
- Moon, R. 1997. "Vocabulary Connections: Multi-Word Items in English." In *Vocabulary: Description, Acquisition and Pedagogy*, Schmitt, N. & McCarthy, M., eds. Cambridge: Cambridge University Press, pp. 40–63.
- Nagy, W. 1997. "On the Role of Context in First- and Second-Language Vocabulary Learning." In *Vocabulary: Description, Acquisition and Pedagogy*, Schmitt, N. & McCarthy, M., eds. Cambridge: Cambridge University Press, pp. 64–83.
- Nation, I. S. P. 2000. "Learning Vocabulary in Lexical Sets: Dangers and Guidelines." *TESOL Journal* 9(2):6–10.
- _____. 2001. *Learning Vocabulary in Another Language*. Cambridge: Cambridge University Press.
- Nesselhauf, N. & Tschichold, C. 2002. "Collocations in CALL: An Investigation of Vocabulary-Building Software for EFL." *Computer Assisted Language Learning* 15(3):251–79.
- Nuttall, C. 1996. *Teaching Reading Skills in a Foreign Language*. Oxford: Heinemann.
- O'Grady, W., Dobrovolsky, M. & Katamba, F., eds. 1997. *Contemporary Linguistics: An Introduction*. New York and London: Longman.
- O'Malley, J. M. & Chamot, A. U. 1990. *Learning Strategies in Second Language Acquisition*. Cambridge: Cambridge University Press.
- O'Malley, J. M., Chamot, A. U., Stewner-Manzanares G., Russo, R. P. & Küpper, L. 1985. "Learning Strategies Used by Beginning and Intermediate ESL Students." *Language Learning* 35:21–46.
- Overland, P. 2008. "Orientation to Communicative Language Teaching." [Online.] Accessed: <http://personal.ashland.edu/poverlan/holes/comm-lang-lrng-ovrview.pdf>
- Oxford, R. L. 1990. *Language Learning Strategies: What Every Teacher Should Know*. Boston: Heinle.
- _____. 2003. "Language Learning Styles and Strategies: Concepts and Relationships." *International Review of Applied Linguistics* 41:271–78.
- Oxford, R. L. & Nysikos, M. 1989. "Variables Affecting Choice of Language Learning Strategies by University Students." *The Modern Language Journal* 73(3):291–301.
- Oxford, R. L. & Shearin, J. 1994. "Language Learning Motivation: Expanding the Theoretical Framework." *The Modern Language Journal* 78(1):12–28.
- Paine, D. 1985. *Biblical Hebrew Introduction*. Grantham, PA: D. Paine.
- Paivio, A. & Desrochers, A. 1981. "Mnemonic Techniques in Second Language Learning." *Journal of Educational Psychology* 73(6):780–95.

- Papathanasiou, E. 2009. "An Investigation of Two Ways of Presenting Vocabulary." *ELT Journal* 63(4):313–22.
- Parunak, V. D. 2001. "Review: Learn Biblical Hebrew." *Journal of the Evangelical Theological Society* 44(1):134–35.
- Payne, J. B. 1962. *Hebrew Vocabularies: Based on Harper's Hebrew Vocabularies*. Grand Rapids, MI: Baker Book House.
- Pekrun, R., Goetz, T., Titz, W. & Perry, R. P. 2002. "Academic Emotions in Students' Self-Regulated Learning and Achievement: A Program of Qualitative and Quantitative Research." *Educational Psychologist* 37(2):91–105.
- Pennington, J. T. 2003. *Old Testament Hebrew Vocabulary: Learn on the Go*. CD and book edition. Grand Rapids, Michigan: Zondervan.
- Pinker, S. 1994. *The Language Instinct: How the Mind Creates Language*. NY: HarperCollins.
- Pratico, G. D. & Van Pelt, M. V. 2001. *Basics of Biblical Hebrew Grammar*. Grand Rapids, Michigan: Zondervan.
- Pratico, G. D., Van Pelt, M. V. & Pennington, J. T. 2006. *Basics of Biblical Hebrew Vocabulary Audio*. Grand Rapids, MI: Zondervan.
- Pulvermüller, F. 2002. *The Neuroscience of Language: On Brain Circuits of Words and Serial Order*. Cambridge: Cambridge University Press.
- Radford, A., Atkinson, M., Britain, D., Clashes, H. & Spencer, A. 1999. *Linguistics: An Introduction*. Cambridge: Cambridge University Press.
- Röllinghoff, A. 1993. "Implementing Word Learning Strategies into an Interactive Learning Environment." *CALICO Journal* 11(2):21–44.
- Ross, A. P. 2001. *Introducing Biblical Hebrew*. Grand Rapids, MI: Baker Academic Press.
- Rubin, J. 1981. "Study of the Cognitive Processes in Second Language Learning." *Applied Linguistics* 2:117–31.
- Ryan, A. 1997. "Learning the Orthographical Form of L2 Vocabulary — a Receptive and a Productive Process." In *Vocabulary: Description, Acquisition and Pedagogy*, Schmitt, N. & McCarthy, M., eds. Cambridge: Cambridge University Press, pp. 181–98.
- Saeed, J. I. 1997. *Semantics*. Oxford: Blackwell.
- Saltz, E. & Donnenwerth-Nolan, S. 1981. "Does Motoric Imagery Facilitate Memory for Sentences? A Selective Inference Test." *Journal of Verbal Behavior and Verbal Learning* 20:322–32.
- Sarasin, L. C. 1999. *Learning Style Perspectives: Impact in the Classroom*. Madison, WI: Atwood Pub.
- Scarcella, R. C. & Oxford, R. L. 1992. *The Tapestry of Language Learning: The Individual in the Communicative Classroom*. Boston: Heinle.
- Schacter, D. 2001. *The Seven Sins of Memory*. New York: Houghton Mifflin Co.

- Schmidt, R. W. 1990. "The Role of Consciousness in Second Language Learning." *Applied Linguistics* 11(2):129–58.
- Schmitt, N. 1997. "Vocabulary Learning Strategies." In *Vocabulary: Description, Acquisition and Pedagogy*, Schmitt, N. & McCarthy, M., eds. Cambridge: Cambridge University Press, pp. 199–227.
- _____. 1998. "Tracking the Incremental Acquisition of Second Language Vocabulary: A Longitudinal Study." *Language Learning* 48(2):281–317.
- _____. 1999. "The Relationship Between TOEFL Vocabulary Items and Meaning, Association, Collocation, and Word Class Knowledge." *Language Testing* 16:189–216.
- _____. 2001. *Vocabulary in Language Teaching*. Cambridge: Cambridge University Press.
- Schmitt, N. & McCarthy, M., eds. 1997. *Vocabulary: Description, Acquisition and Pedagogy*. Cambridge: Cambridge University Press.
- Schmitt, N. & Meara, P. 1997. "Researching Vocabulary Through a Word Knowledge Framework: Word Associations and Verbal Suffixes." *Second Language Acquisition* 19(1):17–36.
- Segler, T. M., Pain, H. & Sorace, A. 2002. "Second Language Vocabulary Acquisition and Learning Strategies in ICALL Environments." *Computer Assisted Language Learning* 15(4):409–22.
- Shore, W. J. & Durso, F. T. 1990. "Partial Knowledge in Vocabulary Acquisition: General Constraints and Specific Detail." *Journal of Educational Psychology* 82(2):315–18.
- Simon, E., Resnikoff, I. & Motzkin, L. 1992. *The First Hebrew Primer*. 3rd ed. Oakland, CA: EKS.
- Slavin, R. E. 1991. "Synthesis of Research on Cooperative Learning." *Educational Leadership* 48:71–82.
- Smith, G. 1991. *Statistical Reasoning*. Columbus, OH: Allyn and Bacon.
- Sökmen, A. J. 1997. "Current Trends in Teaching Second Language Vocabulary." In *Vocabulary: Description, Acquisition and Pedagogy*, Schmitt, N. & McCarthy, M., eds. Cambridge: Cambridge University Press, pp. 237–57.
- Stevens, J. 1986. *Applied Multivariate Statistics for the Social Sciences*. Hillsdale, NJ: L. Erlbaum.
- Stevens, R. J. 2003. "Student Team Reading and Writing: A Cooperative Learning Approach to Middle School Literacy Instruction." *Educational Research and Evaluation* 9(2):137–60.
- Stock, R. 1976. *Some Factors Effecting the Acquisition of Foreign Language Lexicon in the Classroom*. Unpublished PhD Thesis. Illinois: University of Illinois.
- Stoffer, I. 1995. *University Foreign Language Students' Choice of Vocabulary Learning Strategies as Related to Individual Difference Variables*. Unpublished PhD Dissertation. Alabama: University of Alabama.
- Sun, R., Slusarz, P. & Terry, C. 2005. "The Interaction of the Explicit and the Implicit in Skill Learning: A Dual-Process Approach." *Psychological Review* 112(1):159–92.

- Svenconis, D. J. & Kerst, S. 1994. "Investigating the Teaching of Second Language Vocabulary Through Semantic Mapping in Hypertext Environment." *CALICO Journal* 12(2-3):33-57.
- Swan, M. 1997. "The Influence of Mother Tongue on Second Language Vocabulary Acquisition and Use." In *Vocabulary: Description, Acquisition and Pedagogy*, Schmitt, N. & McCarthy, M., eds. Cambridge: Cambridge University Press, pp. 156-80.
- Tabachnick, B. G. & Fidell, L. S. 2001. *Using Multivariate Statistics*. 4th ed. Boston: Allyn and Bacon.
- Tinkham, T. 1993. "The Effect of Semantic Clustering on the Learning of Second Language Vocabulary." *System* 21(3):371-80.
- _____. 1997. "The Effects of Semantic and Thematic Clustering on the Learning of Second Language Vocabulary." *Second Language Research* 13(2):136-83.
- Trask, R. L. 1999. *Key Concepts in Language and Linguistics*. London: Routledge.
- Underwood, B., Erkstrand, B. & Keppel, G. 1965. "An Analysis of Intralist Similarity in Verbal Learning with Experiments on Conceptual Similarity." *Journal of Verbal Learning and Verbal Behavior* 4:447-62.
- Van der Merwe, C. H. J. 2002. "Bible Hebrew Instruction: A Programme Benefitting from Second-Language Learning and Computer-Assisted Language Learning." In *Bible and Computer — Proceedings of the 6th AIBI Congress — Stellenbosch 17-21 July 2000*, Cook, J. ed. Leiden: E J Brill, pp. 619-46.
- _____. 2004. "Towards a Principled Model for Biblical Hebrew Lexicology." *Journal of Northwest Semitic Languages* 30(1):119-37.
- _____. 2005a. *Biblical Hebrew 178 Workbook*. Unpublished Biblical Hebrew Course Text. Stellenbosch: University of Stellenbosch.
- _____. 2005b. "Rethinking Hebrew Instruction." [Online.] Accessed: http://www.logos.com/academic/casestudies/rethinking_hebrew.
- Van der Merwe, C. H. J., Naudé, J. A. & Kroeze, J. H. Forthcoming. *A Biblical Hebrew Reference Grammar*. Sheffield: Sheffield Academic Press.
- Van Pelt, M. V. 2004. *Old Testament Hebrew Vocabulary Cards*. Grand Rapids, MI: Zondervan.
- Van Pelt, M. V. & Pratico, G. D. 2003. *The Vocabulary Guide to Biblical Hebrew*. Grand Rapids, Michigan: Zondervan.
- _____. 2006. *Graded Reader of Biblical Hebrew*. Grand Rapids, MI: Zondervan.
- Vance, D. R. 2003. *A Hebrew Reader for Ruth*. Peabody, MA: Hendrickson.
- _____. 2004. *Introduction to Classical Hebrew*. Leiden: Brill.
- Voss, J. F. & Schauble, L. 1992. "Is Interest Educationally Interesting?: An Interest Related Model of Learning." In *The Role of Interest in Learning and Development*, Renninger, K. A., Hidi, S. & Krapp, A., eds. Hillsdale, NJ: Erlbaum.

- Walker-Jones, A. 2003. *Hebrew for Biblical Interpretation*. Atlanta: Society of Biblical Literature.
- Waltke, B. K. & O'Connor, M. 1990. *An Introduction to Biblical Hebrew Syntax*. Winona Lake, IN: Eisenbrauns.
- Waring, M. 1997. "The Negative Effects of Learning Words in Semantic Sets: A Replication." *System* 25:261–74.
- Watts, J. D. W. 1960. *Lists of Words Occurring Frequently in the Hebrew Bible*. 2nd ed. Grand Rapids, MI: Eerdmans Publishing Co.
- Weingreen, J. 1959. *A Practical Grammar for Classical Hebrew*. 2nd ed. Oxford: Oxford University Press.
- Yates, K. M. 1954. *The Essentials of Biblical Hebrew*. New York: Harper.